

660
JULY 1951

CHEMICAL PROCESSING

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The News Magazine of Processing Developments and Control

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The Cover Picture

Columns for high pressure fat splitting at Emery Industries. One in foreground is new; one in background has been operating with both high and low grade fats for some time. Results of runs are on . . . Page 38

PUTMAN PUBLISHING CO., CHICAGO

Creators of PUTMAN-STYLE Magazines
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more quality-readership; more READER ACTION

Highlights

of this issue's
274 articles

Describing developments in
processes, techniques, mate-
rials, equipment

Cottonseed Meal from Exsolex
Process Runs 0.26 to 0.4%
Residual Oil 8

Gentle but Thorough Blending
Eliminates Separation in As-
pirin Formula 16

Catalytic Reforming Process
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Air Activation, Fluidizing As-
sure Rapid Flow of Bulk Mate-
rial through Pipe 73

Bulk Flow Controlled without
Clogging at Valve 137



"That's Interesting"

That's what we would call "getting around"!

Extremely high rotational speeds are now being achieved in various ways. Along this line are recent experiments with small steel rotors (diameters of 1/100 inch). Using magnetic suspension, speeds of 800,000 revolutions per second have been attained. This produces a centrifugal field in excess of one-half billion gravities. (Ohmite News, Chicago, Ill.)

L. A. smog pollution only 40% industrial

There have been no basic changes in the Los Angeles climate to explain the increased frequency and severity of smog in recent years. During a long and extensive study, air pollutants of all types were collected and analyzed. Smog was found to consist of a complex and variable mixture of gases and particles of liquids and solids. More than 50 different chemical particles have been positively identified as being in the air at all times. Some were found in higher concentrations during foggy weather.

The materials investigated during the past year included oxidants, liquid droplets, crystals, aldehydes and sulfuric acid. Of these, oxidants appear to be the most directly related to smog attacks.

Studies show that smog may contain as many as 130,000,000 particles per cu ft. Of the total combustion and evaporation products put in the air daily, about 60% comes from activities of the public such as driving autos, burning trash and heating homes and office buildings. The petroleum industry, because it is by far the largest industrial user of fuel, contributes to 25%, and all other industry about 15% of the pollution. (Summarized from Research for Industry — May 1951, Stanford Research Institute, Stanford, California.)

"Robbing the cradle"

"Robbing the cradle" takes on a new meaning with the report that baby bottle nipples are used by Delco-Remy Division of General Motors to mask starting motor terminals during painting. More than 40,000 are used yearly for this purpose.

Economical agent

A large paper mill in British Columbia is using Amberlite IRC-50 (high capacity carboxylic cation exchanger) as probably the most economical agent yet devised to recover chemicals and eliminate stream pollution where sodium-base sulphite liquor is involved. Application is described in a paper delivered by L. K. Bickell and G. D. Tretheway at the Annual Meeting of the Canadian Pulp & Paper Assn. early this year. (As reported in Amber-hi-lites — Rohm & Haas Co., Philadelphia 5, Pa.)

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see information request blank between pages 2-3.

"That's Interesting"

Small sealed vessels, hypodermic syringes are tools of novel direct chemical analysis

Small pharmaceutical-type serum bottles with pressure seal rubber stoppers offer a new approach to direct chemical analysis to determine concentrations of such functional groups as hydroxyl, carbonyl, and carboxyl. This information is frequently required in the study of organic compounds.

In using the serum bottles, hypodermic syringes and needles and a rapid-weighing analytical balance are required. Analyses can be made on materials weighing as little as a few milligrams. Needles of the syringes penetrate the stoppers and contents are not exposed to atmosphere. Low boiling liquids may be heated without observable loss. Bottles containing the exact quantities of reactants required for single determinations can be stored for future use.

Bottles may be removed from storage, weighed and sample added by syringe. Second weighing reveals amount of sample added. Technique has been used for analyses for alcohols, esters, aldehydes and water. (Data is from Polychemicals Dept., Laboratories of The Experimental Station of E. I. du Pont de Nemours and Company, Wilmington, Del.)

Injury rate in chemical plants less than half national average

A record low of 4.56 injuries per million man-hours worked was achieved in 1950 by member companies of the Manufacturing Chemists' Association, Inc. These companies account for about 90% of the total U. S. chemical production. This accident rate is less than half the national average and lower than any other industry except communications.

Water-white, non-staining adhesive bonds foamed plastic efficiently

A vinyl-based cement provides crystal clear bonding of white Styrofoam. Heretofore this versatile transparent adhesive has been used in volume to cement dissimilar plastics, and plastics to non-plastics. In addition to being water-white, the glue is completely non-staining. Because of its transparency, even an excessive amount of the adhesive will not mar the plastic object made of Styrofoam, nor soften the thinnest section.

Containing 50% vinyl solids in solution, adhesive remains permanently flexible and results in maximum mileage and minimum shrinkage according to the manufacturer's chemists.

Styrofoam (Dow Chemical Co., Midland, Mich.) has been used for window display accessories, Christmas decorations and similar applications. Its eye-appeal has stimulated its application in creating attractive packages as well as affording protection to fragile contents. (Rez-N-Glue is a development of Schwarz Chemical Co., Inc., 326 West 70th St., New York 23, N. Y.)

Cutters can be adjusted to cut any length of staple

There is a definite tendency on the part of manufacturers to supply synthetic yarns only in continuous form. This is because mills have staple length requirements which they use in various blends with other yarns, and yarn manufacturers cannot stock quantities of cut staple. This is not a matter of concern, however, to mills using cutters adjustable to cut any length of staple. (Taylor-Stiles and Co., 21 Bridge St., Riegelsville, N. J.)

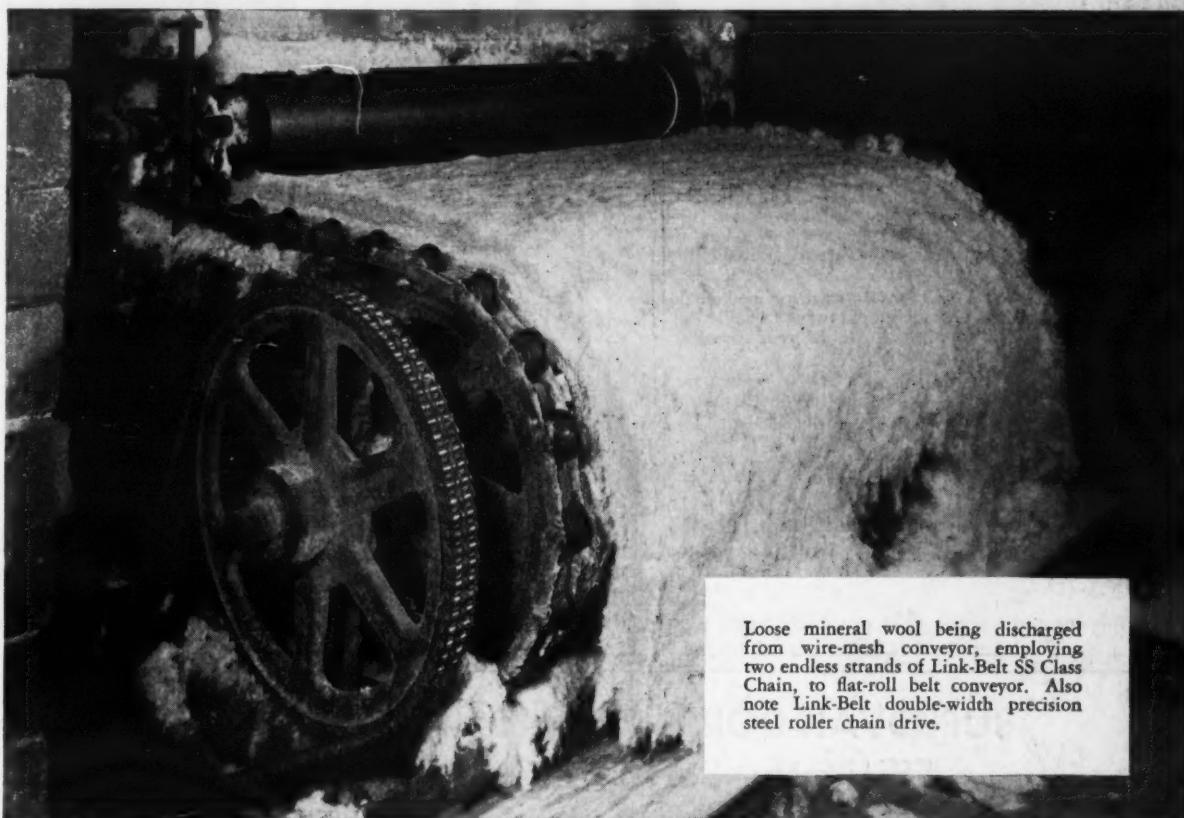
Unusual "gear" operates rotary filter

A 158-link roller chain, supported by special brackets, does work that might require an expensive gear. Installation is on an Oliver horizontal rotary filter. A vari-speed motor pulley allows the table to be revolved at exact speed which causes proper filtration to take place at the highest possible rate. With this pulley and the wide variety of materials of which the filter table can be made, ore concentrates, foundry sand, phosphoric acid, plastic granules, crystalline salts and many other materials are handled advantageously. (Reeves Pulley Company, Columbus, Indiana.)

(Continued on third cover)

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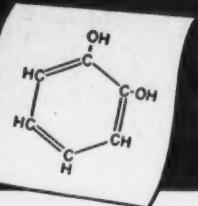
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(PYROCATECHOL)



produced commercially in 2 grades

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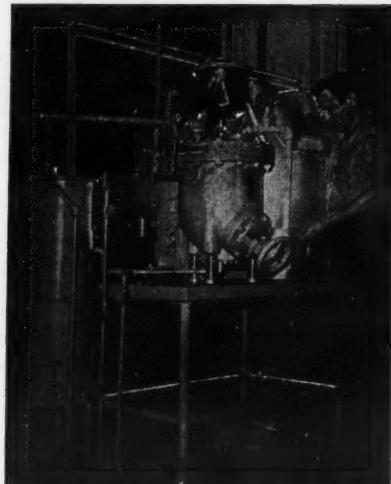
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Why the Pilot Plant?

By WALTER E. LOBO
Director,
Chemical Engineering Division,
The M. W. Kellogg Company

B.S. in Ch.E. from Massachusetts Institute of Technology, 1926; graduate work in sugar engineering at Louisiana State University.

Chief Chemist of Central Agabana, Fomento, Cuba, 1927. Chief Chemist of Ingenio Manuela, S.A., Palmira, Columbia, 1928-29. Joined Kellogg as Process Engineer in 1929, taking present post in 1939.

National Defense Research Committee (Oxygen Section), 1942-45. Technical lecturer, member A I Ch E.



WHAT REALLY is a pilot plant and why are millions of dollars spent each year by research and development groups in the design, erection and operation of pilot plants? If we consult the dictionary we shall find that "a pilot plant is a small factory in which processes planned for full-scale operation are tested in advance to eliminate problems, etc." The definition is correct so far as it goes but it does not go far enough. However, let us keep in mind that a pilot plant tests a process. It does not, in itself, test a piece of equipment, nor fundamentally yield design data for such equipment. A unit which does that is a small-scale, or pilot-scale, unit which may, or may not, be incorporated in a pilot plant. The overall objectives of the pilot plant are, therefore, bigger and broader than those of what might be called a working model, or small-scale prototype.

Pilot plants may be large or small, expensive or inexpensive, complete or incomplete. Thus, they may produce 25 lb of product per day or 100,000 lb per day; they may cost \$10,000 or \$1,000,000 or more, they may be all manually operated or fully automatic and far better instrumented than a commercial plant. They may need even more people to operate them than would a large plant. But the fundamentals of the pilot plant still will be the same — it will test a process.

There are many reasons why in development projects today pilot plants are used to lead the way. As the definition stated, they may be used to eliminate problems. This can mean many things, but even so, the pilot plant can do more than this. It can provide information on:

1. The quality and yield of products obtainable by the process;
2. The optimum operating conditions, e.g., temperature, pressure, space velocity, concentrations, reflux ratios, etc.;
3. The effect of one step of the process on the operation of subsequent steps;
4. The effect of small quantities of possible impurities on the yield and quality of products, or the effect of recycling streams within the process;
5. The effect of time on the yield and quality of product, e.g., the effect of aging or poisoning of a catalyst;
6. The effect of time on the physical aspects, e.g., the attrition of catalyst particles, or balls, in a ball

(Continued on page 140)

CHEMICAL PROCESSING

CHEMICAL PROCESSING

(CHEMICAL PROCESSING PREVIEW)

The News Magazine of Processing
Developments and Control

VOL. 14

JULY, 1951

No. 7

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111 East Delaware Place, Chicago 11, Illinois
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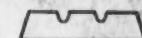
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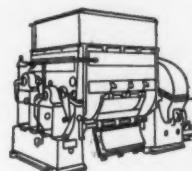
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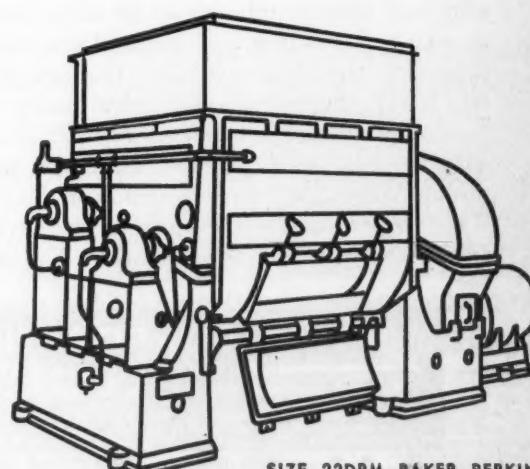
ALUMINUM PRODUCTION NEEDS CARBON ELECTRODES



ELECTRODES REQUIRE MIXING



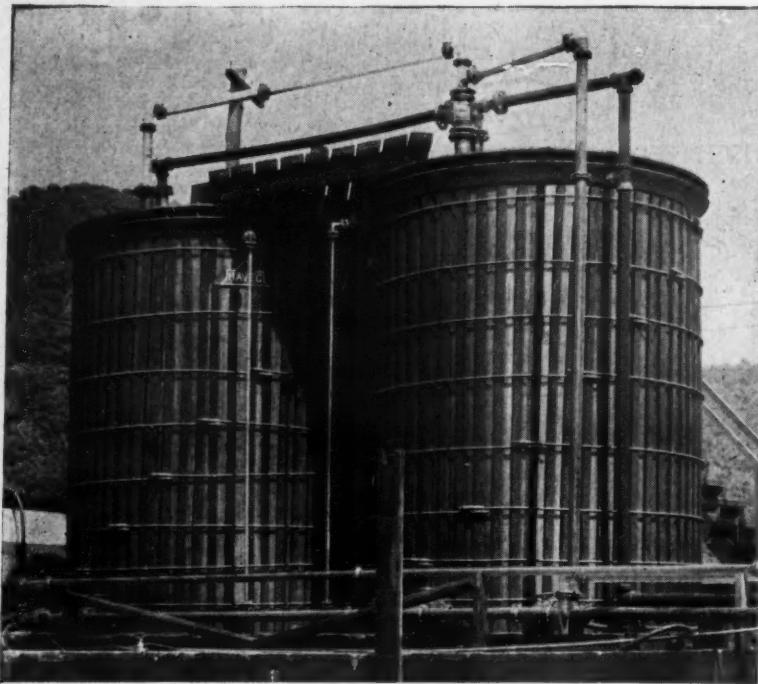
Baker Perkins unidor mixers are designed, built and preferred for the rapid processing of carbon electrodes and pot linings for aluminum production either Soderberg or Hall process. For complete confidential data write to Baker Perkins Inc. Chemical Machinery Div., Saginaw, Mich.



SIZE 22DRM BAKER PERKINS UNIDOR MIXER WITH CAST SIGMA BLADES CORED FOR STEAM.

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Haveg Chemical Processing Equipment



Withstands Hard Usage Through and Through

You can expect—and get—long service life from tanks, piping, towers and all other chemical processing equipment made of Haveg.

This is true because Haveg is resistant to acids, alkalis, salts and solvents throughout its entire mass. It is *not* a coating or a lining! It is a structural material with physical strength adequate for self-supporting equipment and withstands both thermal and mechanical shock.

Another advantage of Haveg equipment is the fact that alterations in design, as well as repairs made necessary through abuse, can be readily made on the job.

It will pay you to investigate all the advantages Haveg equipment offers you. Write today for bulletin.



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HIGHLIGHTS

(Continued from front cover)

- Accurate Metering of 4 Streams Yields Blended Product that Conforms to Standards 12
- Beet Yard Molasses Treated by Ion Exchange Becomes Refined Syrup 13
- Bending Steel Plate in 180° Arc Doesn't Loosen Its Plastic Corrosion-resistant Coating 18
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Edward Valves

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INSTRUMENT VALVES

Fig. 952-3 Series

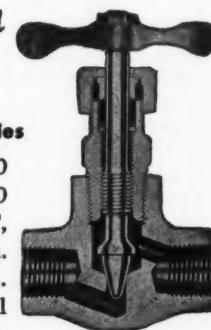


Ratings of 6000 lb WOG or 1500 lb sp at 1000°F, in sizes $\frac{1}{4}$ in. through 1 in. A compact, heavy duty valve with many extraordinary features. Drop forged body and yoke. Tapered 13% chromium stainless steel needle-type integral or swivel stem-disk. O. S. & Y. No bonnet joint—swing bolted gland. Screwed or socket welding ends—globe and angle types. Carbonsteel or 13% chromium stainless steel body.

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GAGE VALVES

Fig. 152-3 Series

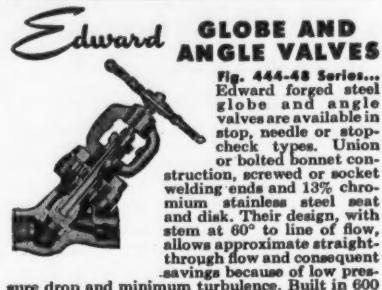


Ratings of 4000 lb WOG or 600 lb sp at 750°F, in sizes $\frac{1}{8}$ in. through 1 in. Has special tapered body-bonnet thread, joint in $\frac{1}{8}$, $\frac{3}{8}$ and $\frac{1}{2}$ in. sizes so bonnet remains tight. Union bonnet in $\frac{3}{4}$ and 1 in. sizes. Carbon, 13% chrome or 18-8 stainless forged steel body—13% chrome stainless steel semi-needle disk. Female outlets and female and male inlets. Globe and angle types.



YOU NEED THIS!
FOR COMPLETE INFORMATION on all Edward Steel Valves, write to Edward, Department CP, for 28-page comprehensive catalog #104, there's no obligation, of course.

Edward Valves

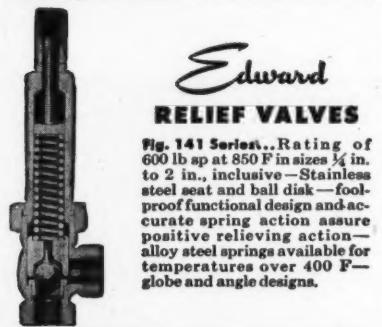


GLOBE AND ANGLE VALVES

Fig. 444-48 Series... Edward forged steel globe and angle valves are available in stop, needle or stop-check types. Union or bolted bonnet construction, screwed or socket welding ends and 13% chromium stainless steel seat and disk. Their design, with stem at 60° to line of flow, allows approximate straight-through flow and consequent savings because of low pressure drop and minimum turbulence. Built in 600 and 1500 lb sp series at 850°F and in sizes $\frac{1}{4}$ in. to 2 in. inclusive.

Edward CHECK VALVES

Fig. 2672-78 Series... Edward forged steel check valves are built in both ball and piston disk types in 600 or 1500 lb sp series at 850°F for either horizontal or vertical lines. Union or bolted bonnet construction, screwed, socket welding or flanged ends and 13% chromium stainless steel seats and disks. Built in sizes $\frac{1}{4}$ in. to 2 in. inclusive.



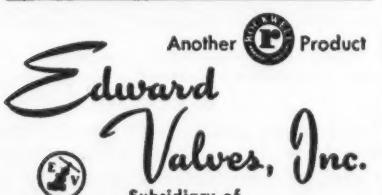
Edward RELIEF VALVES

Fig. 141 Series... Rating of 600 lb sp at 850°F in sizes $\frac{1}{4}$ in. to 2 in., inclusive—Stainless steel seat and ball disk—fool-proof functional design and accurate spring action assure positive relieving action—alloy steel springs available for temperatures over 400°F—globe and angle designs.



Edward STRAINERS

Fig. 128 Series... Rating of 600 lb sp at 850°F with screwed or socket welding ends—stainless steel screen approximately seven times that of internal diameter of pipe gives extra large screening capacity—may be installed in vertical or horizontal pipe lines—built in sizes $\frac{1}{4}$ in. to 2 in., inclusive—forged steel—globe-type design.



Another  Product

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14 Horton Tanks Used in Florida Mining Operation



Late in 1949 the American Cyanamid Company placed its second phosphate rock mine in operation east of Tampa. This open-cut operation, known as the "Sidney" mine, helps supply hundreds of thousands of tons of phosphate rock products annually to agricultural and industrial users throughout the world.

Fourteen Horton welded steel tanks are used in a process that takes phosphate matrix from nearby deposits . . . breaks it up . . . washes, screens, and deslimes it . . . and then recovers it for storage and shipment.

Four of the units we furnished are 50-ft. diam. processing tanks that deslime a fine slurry of sand, phosphate pebbles and mud, and hold it for transfer to the flotation plant. The other ten units are 22-ft. diam. hopper bottom tanks used to store both coarse phosphate pebbles and fine concentrate preparatory to shipping.

Specialized tank construction offers no obstacles to our design, fabrication and erection departments. Their knowledge enables them to tackle any problem with complete confidence. If you have a tank problem, consult our nearest office.

The view at the right shows 10 Horton tanks used to store and load phosphate at the "Sidney" mine near Tampa, Florida. The four at the far left are for coarse rock. Fine phosphate concentrates are stored in the other six.

The aerial view above also shows three of the four 50-ft. diam. Horton tanks used to deslime slurry.



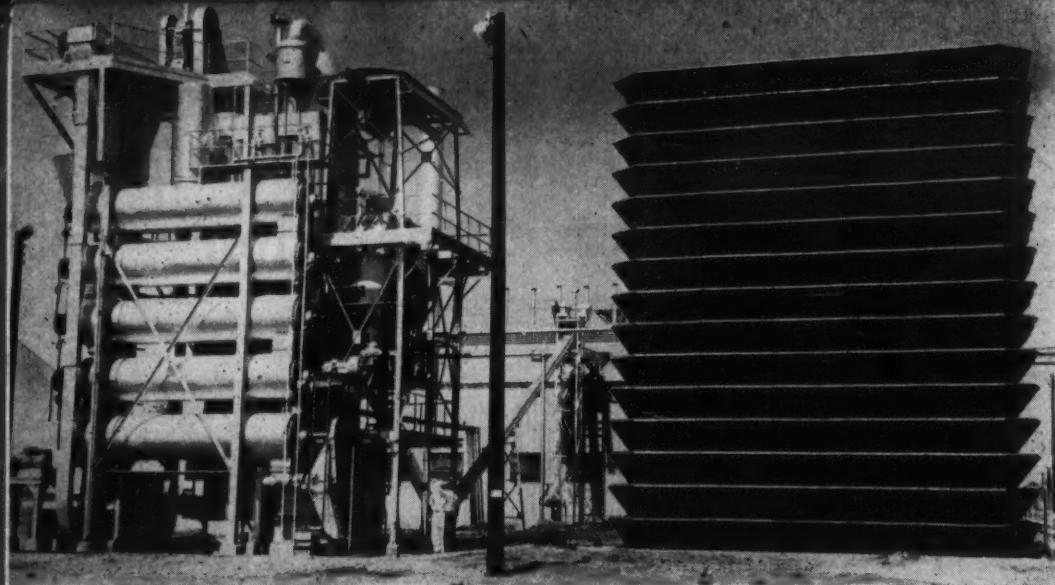
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Plants at BIRMINGHAM, CHICAGO, SALT LAKE CITY, and GREENVILLE, PA.

When inquiring check CP 5341 on handy form, pgs. 2-3



Outdoor packaged solvent extraction unit came pre-assembled to Sherman, Texas, for fast, economical erection

Cottonseed Meal from Exsolex Process Runs 0.26 to 0.4% Residual Oil

New marketing development

PROBLEM: In the past, oil mills processing only one type of material have been placed in an unfavorable profit position by any one of a number of factors. For example, extraction of any one vegetable oil is usually highly seasonal, resulting in many single-purpose mills being idle during part of the year. To illustrate, 76% of the domestic cottonseed crop reaches oil mills by December 1st. By the end of January, over 90% of the seed is received by mills. To handle this fast movement, nearly all mills operate 24 hours a day during fall and winter months, but are idle or engaged in other activities during the remainder of the year.

In addition, unfavorable prices for raw material and/or finished products have caused some single-purpose mills to experience daily operational losses. To shut down a mill until prices are more favorable is not satisfactory . . . this practice usually results in even greater financial losses because capital and equipment is unemployed.

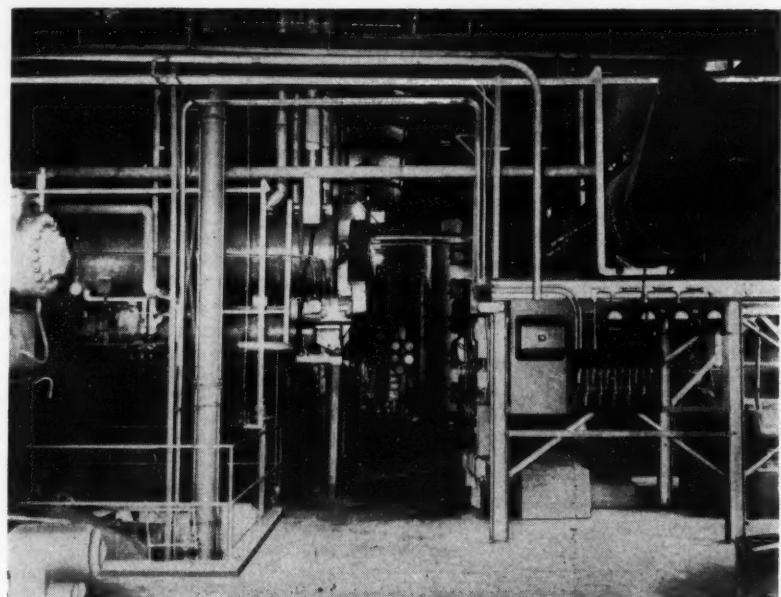
Solution: The new 400-ton-per-day mill constructed for General Vegetable Oil Company at Sherman, Texas, is primarily intended for extraction of oil from cottonseed, but can process peanuts, soybeans and flaxseed with the same equipment. Plant employs the Anderson Exsolex process, combining expeller-solvent extraction in one integral system. General Vegetable Oil Company is the first Exsolex plant to operate on cottonseed.

Unlike the ordinary oil mill, the plant processes cottonseed *meats* only and does no delinting or decorticating. Meats are supplied by six smaller delinting and dehulling oil mills (1 to 160 miles away) which receive seed from ginners as is their customary practice. Seeds are stored, delinted and dehulled at these outlying mills. The cottonseed meats are adjusted as to protein content by addition of hulls and then trucked to the central Exsolex plant at Sherman.

It has been established that there is no appreciable rise in free fatty acid of the oil and no appreciable loss in oil quality in transporting meats for processing in this fashion, provided the meats are not stored for more than one or two days after dehulling. Since the meats are much less bulky than cottonseed itself, larger tonnages can be transported economically. This permits establishment of a large oil mill which can employ more profitable methods of processing the oil and meal on a large scale basis.

Because of the versatility of the Exsolex plant, it is a simple matter to gear the outlying delinting and dehulling plants to furnish relatively fresh meats to the

Versatile 400-ton-per-day plant can process other seeds and nuts, receives delinted and dehulled meats from outlying mills



General view of Pre-Expellers where rolled and cooked cottonseed meats are pre-pressed

Exsolex plant. The Sherman plant handles meats from 400 tons of cottonseed per day, and the outlying mills are operated to supply an average daily capacity of about 240 tons of meats per day (equivalent to 400 tons per day of the seed). All meats received are sampled for analysis of oil, protein, moisture and anticipated yields.

Meats are stored in two large bins. They are conveyed

from these bins to roller mills in the oil plant and then to two large cottonseed cooking vessels. Rolled and cooked meats are then pre-pressed in five Anderson Pre-Expellers. Oil from this pre-pressing is settled in an Anderson screening tank and then filtered before being pumped to oil storage.

Cake from Pre-Expellers is broken into particles and then flaked into tough, durable flakes. These flakes are conveyed to the Anderson solvent extraction unit where in the oil remaining is extracted. Meal from solvent extraction is cooled and conveyed to storage. Solvent extracted oil, after removal of solvent, is mixed with the pre-press oil and pumped to storage.

Results: Multiple-purpose plant can stop processing any particular oil bearing material when market conditions become unfavorable, and start processing another material where prices are more favorable. Then too, the mill can switch over from one commodity to another as the various oil bearing seeds and nuts are harvested. A mill changing from one commodity to another so that it has a continual, profitable year-long operation naturally enjoys a better financial position than its competitor who is idle part of the year.

At Sherman, the Exsolex process is producing a residual oil in the cottonseed meal of only 0.26 to 0.4% as compared with 2.0 to 5.0% in cakes from other crushing or extraction methods. Oil is of excellent quality. The crude oil refines into a light color and has excellent bleaching qualities for manufacturers of high-grade oleomargarine and shortening.

Meal is similar in color to hydraulic meal and has the same high protein content. In addition, the Gossypol content of the meal is very low.

The flakes produced from the treated Pre-Expeller cakes are durable and do not disintegrate into fines during the extraction process. This characteristic eliminates the necessity of a continuous horizontal centrifuge and increases the filter cycle from a few hours to a few days. The increase in filter cycle minimizes labor costs, solvent loss, and replacement of filter aid, filter cloths and gaskets.

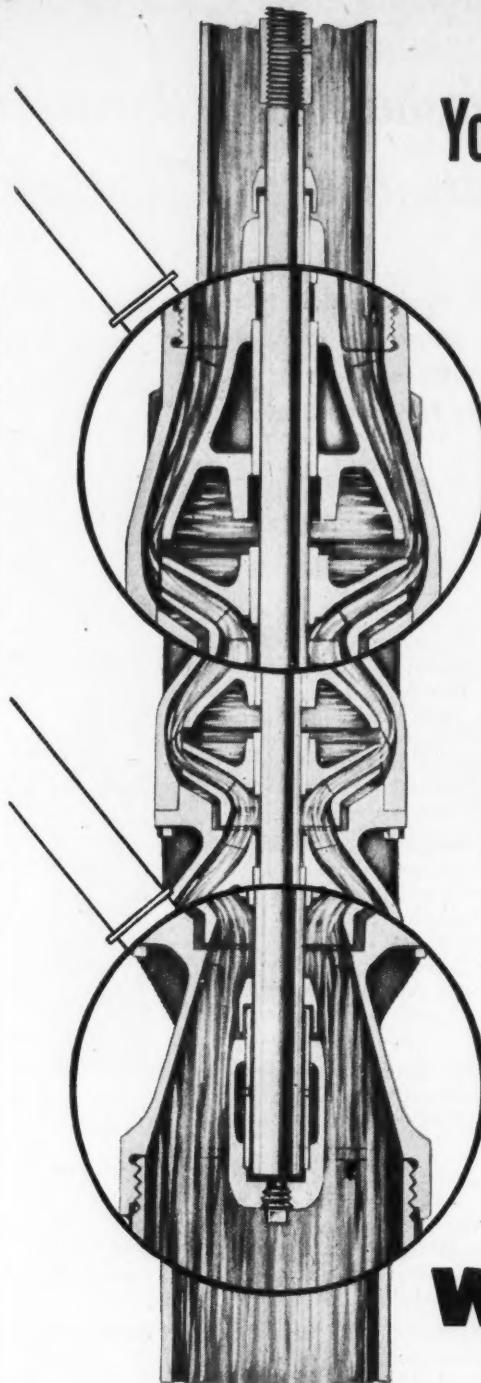
Source: Exsolex process is a development of The V. D. Anderson Co., Dept. CP, 1993 W. 96th St., Cleveland 2, Ohio. . . . or for more information check CP 5342 on handy form, pages 2 and 3.

Tells how to run titrations in one-half former time

Automatic titration method and equipment are described in 4-page booklet. Maximum time saving is effected by having equipment run titrations while the technician prepares samples. Also shown are various pH measurement and electrolytic supplies. Booklet CP-5 is issued by Wilkens-Anderson Co., Dept. CP, 4525 W. Division St., Chicago 51, Ill. When inquiring specify CP 5343 on handy form, pages 2 and 3.

How liquid level can control more than one pump

Methods of using two or more pumps for programmed operation are shown in 4-page publication. Pump controls are actuated by high and low liquid level. Several levels in the same tank can be used for control points. Methods of alternating pumps are shown, and specifications of typical systems are given. Bulletin 1110 is issued by Automatic Control Co., Dept. CP, St. Paul 4, Minn. When inquiring specify CP 5344 on handy form, pages 2 and 3.



You Can't Lose Your Bearings

when you follow the tip
to buy WORTHINGTON

When you buy a vertical turbine pump, be sure the top and bottom bearings are well protected.

Here's the protection Worthington gives the bearings of *its* pump—better protection than you'll find in any other vertical turbine pump.

Bottom bearing. It's grease-packed and won't need attention for the life of the pump. Tests of grease-packed bearing versus rubber bearing show the advantage greatly in favor of the former.

Top bearing of oil-lubricated models. Seals above and below the drain ports keep out abrasives which would cause wear and damaging vibration. They also prevent water from entering the tube, which could cause emulsification of the oil and accelerated wear of the line shaft—a Worthington exclusive.

Sand collars. In water-lubricated models, sand collars at both ends of bowl assembly provide further protection by keeping abrasives away from the bearings.

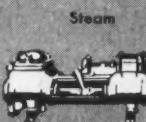
Worthington Vertical Turbine Pumps are available in sizes from 6 in. up, to handle liquids at temperatures of minus 7F. to 500F., with maximum head per stage over the entire size range.

For other Worthington exclusives—such as flanged and bolted bowls in all sizes—write to Vertical Turbine Pump Division, Worthington Pump and Machinery Corporation, Harrison, New Jersey or Denver 16, Colorado.

WORTHINGTON



THE WORLD'S
BROADEST LINE
ASSURES YOU THE
RIGHT PUMP FOR
EVERY JOB



Steam



Power



Rotary



Vertical Turbine



Centrifugal

When inquiring check CP 5345 on handy form, pgs. 2-3



with the AIRETOOL Tube Rolling Control

No more loose tubes. No more over expansion. Get perfect tube rolling now with Airetool's new, improved tube rolling control. Its accuracy will amaze you and its speed will reduce tube rolling time by one-half. Even inexperienced operators use this new control with perfect results.

HERE'S HOW



Just set the dial on the control box. This is calibrated for the tube size and metal type to be rolled. Next insert the Airetool ball bearing type expander and when the tube has been perfectly rolled the control cuts off the power. The expander is quickly removed, ready to go to work on the next tube. Field experience proves that, by means of this control, tube rolling time can be CUT IN HALF.

TO FIND OUT MORE

write the AIRETOOL Mfg. Co., 331 S. Center St., Springfield, Ohio. Write, wire or phone today.



AIRETOOL
MANUFACTURING COMPANY

SPRINGFIELD, OHIO

Branch Offices:

New York, Chicago, Philadelphia
Houston, Tulsa, Baton Rouge

There's an Airetool Tube Cleaner and Tube Expander for every type of Tubular Construction When inquiring check CP 5346 on handy form, pgs. 2-3

Washes Lab Glassware Automatically — Cuts Use of Cleansers 25%, No Breakage

Beakers, flasks, test tubes, etc., are removed from machine spotlessly clean and dry, ready for immediate use

PROBLEM: With labor at a premium these days, American Bio-Synthetics Corporation, sex hormone manufacturers in Milwaukee, were hard-pressed to find persons to wash their laboratory glassware. Women were required with the thought that their kitchen dishwashing experience would be helpful. However, even with a training course to introduce them to the cleaning of chemical glassware, their techniques were found to be entirely inadequate.

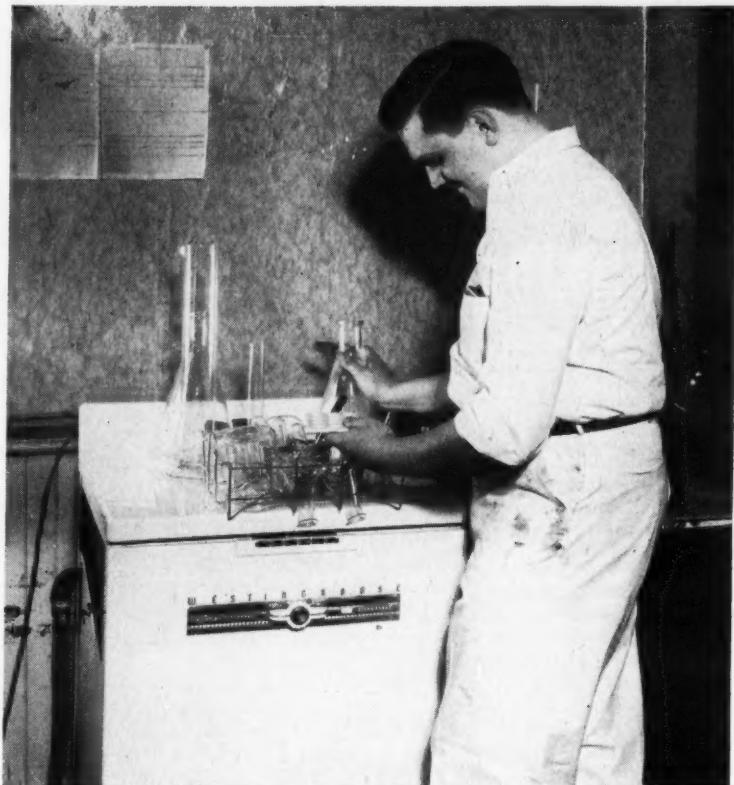
Fragility of the glassware resulted in excessive breakage with attendant high replacement costs and oftentimes a halt in important research work while waiting for shipments of new apparatus. Second trips of the glassware to the dishpan because it wasn't spotlessly clean the first time further added to manual cleaning expenses.

It didn't take Bio-Synthetics long to deduce that the conventional method of dishwashing had no part in a modern chemical laboratory.

Solution: After Mrs. H. A. Pinkalla, wife of Bio-Synthetics' president, suggested that they try one of the home-type Westinghouse front-opening, fully-automatic dishwashers, an actual demonstration in the lab was arranged. This machine spray rinses, washes, then double rinses and dries.

The machine has two wire racks and a wire mesh basket, each a separate unit, in its washing chamber. Capacity is 68 pieces of dishware (in racks) and 40 pieces of silverware (in basket) — on a household basis. In the test demonstration, the machine was loaded to its capacity with dirt-baked beakers, sticky flasks, and various other items of glassware (test tubes, culture dishes, etc.) with varying degrees of stain. Machine was started, in less than 15 minutes the final wash and rinse cycle was completed, and the heating element came on automatically for drying, after which the machine shut itself off.

Results: Upon removal from the washing machine, beakers sparkled, test tubes were spotlessly clean, and the culture dishes were sterile enough for use. Round bottom flasks were ready for use without drying for such anhydrous reactions as the Grignard. Hard-to-



Lab chemist removing spotlessly clean items of glassware from automatic machine after less than 15-minute washing-rinsing-drying cycle. Items are ready for immediate use

clean Buechner funnels were cleaner than had been possible with previous hand washing; filter flasks, spatulas, evaporating dishes, etc., were successfully cleaned.

Bio-Synthetics has made the Westinghouse Dishwasher a permanent fixture in its lab. No glassware is broken now as a result of the washing operation. Solvent and detergent costs have been cut 25% with the machine, since these materials are now utilized economically. In addition, wear and tear on rubber gloves and aprons, necessary tools for manual washing, have been substantially reduced. Above all, labor involved in washing glassware is now virtually eliminated. This machine is said to have paid for itself in merely 60 days.

Glassware with tarry residues and oils sometimes might require more than one wash cycle. Special racks are now being given consideration to accommodate the more intricate pieces of glassware since the machine has been adapted to the chemical laboratory.

Source: Automatic Dishwashing Machine is a product of the Westinghouse Electric Corp. at Mansfield, Ohio,

with the present installation made by Westinghouse Electric Supply Company, Dept. CP, 546 N. Broadway, Milwaukee 2, Wis. . . or for more information check CP 5347 on handy form, pages 2 and 3.

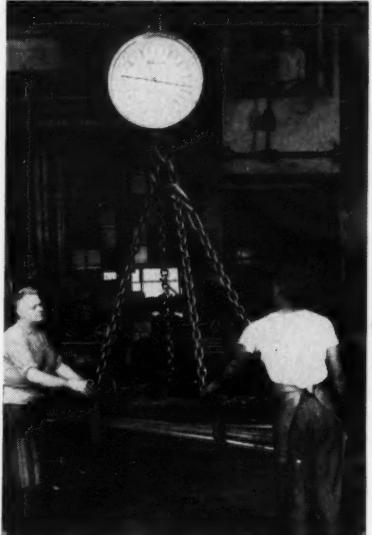
Rod-weighing time cut 75% by crane-hung scale . . .

one man takes readings on rod bundles as they are moved along by crane

Problem: Weighing a five-ton load of rods at The Riverside Metal Company, Riverside, N. J., took five minutes and usually required attention of three men, plus a foreman who recorded scale readings.

Loads to be weighed had to be lifted clear of obstructions, transported across the main bay to a floor scale, lowered onto a raised wood table (constructed on the scale to prevent longer rods from touching floor on either side), then weighed and finally returned across the mill again to the next operation.

Solution: The company now uses a 20,000-lb dial scale, built to specification, on the crane. Scale is simply hooked below the lower block of crane by the oval eye built into scale body. Normally, the unit remains slung in this position throughout a work shift, and tackle around the rod loads is made fast in conventional manner to hook extending below scale. The crane operator records scale readings as loads are in transit.



Two-foot dial, graduated in units of 20 lb, is easily read by crane operator who takes readings while loads are in transit

When not in use for an extended period, as between shifts, the scale is unhooked from crane and placed in a specially designed cradle which is mounted on casters for easy movement across mill floor. It is designed so that dial face is tilted away from cradle backpiece, minimizing the possibility of scuffing or breaking of glass.

Results: The unproductive weighing time has been cut about 75%. After loads have been fastened to crane scale, only one man is required to do the weighing.

Source: Scale was built by Hydroway Scales, Inc., Dept. CP, 20624 W. 8 Mile Road, P.O. Box 176, Detroit 19, Mich. . . or for more information check CP 5348 on handy form, pages 2 and 3.

How to underlay tile floors

Materials, mixing, priming, laying, trowelling and finishing mastic binders for floor tiling are explained in 4-page folder. "Mastic Flooring Underlays" is issued by The Flintkote Co., Inc., Dept. CP, 30 Rockefeller Plaza, New York 20, N. Y. When inquiring specify CP 5349 on handy form, pages 2 and 3.

How Celite Mineral Fillers give a product delicate abrasiveness . . .



Putting a "Soft" shine in polishes

TO PRODUCE A POLISH that is scratch-free—yet contains exceptional cleaning powers—most leading manufacturers of fine polishes use one of the Celite Mineral Fillers as a standard ingredient.

This use of Celite Fillers is based on

THESE CELITE PROPERTIES BENEFIT MANY TYPES OF PRODUCTS

Because of their inertness and great bulk per unit of weight, Celite Mineral Fillers make ideal bulking agents for powders and pastes. Their tiny multi-shaped particles interlace to stiffen and strengthen admixtures. The microscopically small facets of these particles diffuse light so effectively that they can be utilized to impart any desired degree of flatness to a surface film. Their light, porous nature improves suspension, helps prevent segregation. And

their delicate non-scratching abrasive action—a property that derives from their porous, thin-walled cellular structure. It is one of many unusual physical characteristics that adapt these diatomaceous silica powders to numerous industrial uses.

their high absorption properties and unique diatom structure make them unusually effective as a means of overcoming caking in deliquescent materials.

If you are looking for the "extra something" to lift your product above competition—at a negligible cost—why not discuss your problem with a Johns-Manville Celite Engineer? For further information and samples, write Johns-Manville, Box 290, New York 16, N. Y.

CHECK LIST OF PRODUCT BENEFITS OBTAINABLE AT LITTLE COST WITH CELITE MINERAL FILLERS

- Added Bulk
- Better Suspension
- Faster Cleaning Action
- Greater Absorption
- Improved Color
- Better Dielectric Properties
- More Durable Finish
- Increased Viscosity
- Elimination of Caking
- Higher Melting Point
- Better Dry Mixing
- Improved Dispersion



Johns-Manville CELITE®

MINERAL FILLERS

When inquiring check CP 5350 on handy form, pgs. 2-3

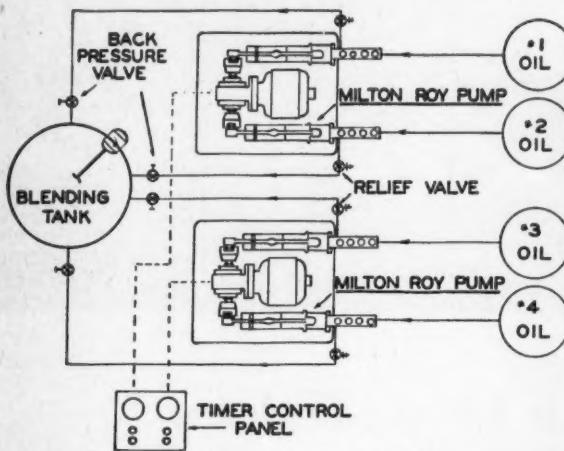
Accurate metering of 4 streams yields blended product that conforms to standards . . .

all batches of wood stain have the same quality due to metering with controlled-volume pumps

Problem: Employing a hand method for blending four primary wood stain colors, The Gilbert Spruance Company, Philadelphia, Pa., found that batches of blended products occasionally varied in color due to inability to accurately meter out precise quantities of each component. As a result of non-conformity to color standards, excessive amounts of final product were lost.

Solution: After analysis of the problem, controlled-volume pumps were concluded to be the most satisfactory means for solution.

Two 63-gph and two 20-gph Milton Roy controlled-volume pumps (each operating at 15 psi) were installed



Blending of wood stain colors, using controlled-volume pumps for metering out precise quantities of components

and form the basis for the new blending system (illustrated). A timing device permits these units to precisely discharge four stain streams into a blending tank for a pre-set time interval.

Pumps are 18-8 stainless steel construction on the liquid ends, ball checks, ball seats, plunger, and packing gland. One-third horsepower, explosion-proof gearmotors furnish the driving power. Discharge can be accurately adjusted. Accuracy of discharge is 99% or better, based on the full capacity of pumps.

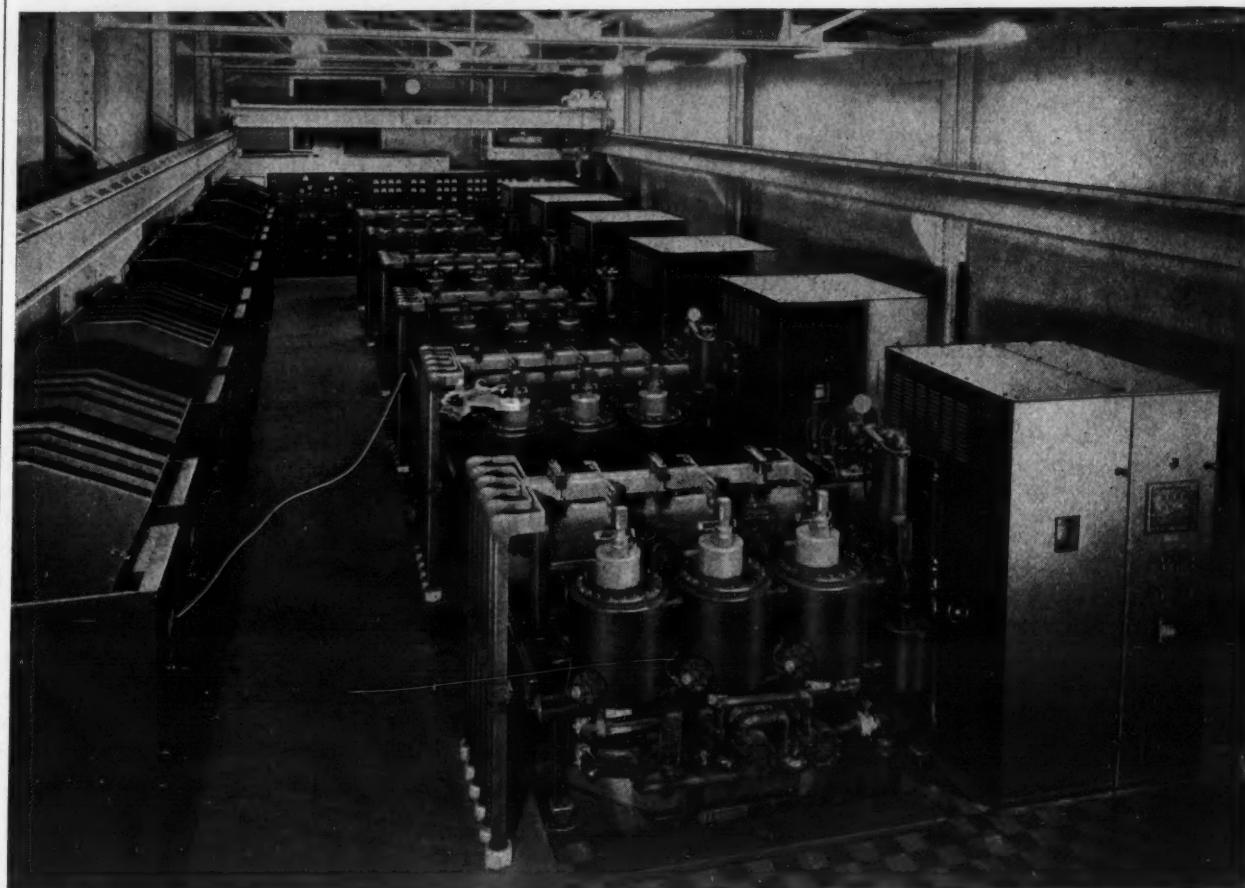
Results: Metering out precise quantities of each of the four stain constituents yields a blended product conforming to color standards. One batch is of the same quality as every other, consequently no final product is lost.

Source: Controlled-volume pumps are made by Milton Roy Company, Dept. CP, 1310 E. Mermaid Lane, Chestnut Hill, Philadelphia 18, Pa. . . . or for more information check CP 5351 on handy form, pages 2 and 3.

Variety of applications found for wire cloth

Series of 2-color bulletins describe various applications and details of woven wire products. Four cover conveyor belts giving wire and opening sizes, ultimate strength data and application suggestions. Two describe wire cloth used

G-E rectifier system for chlorine cell line gives sure d-c power!



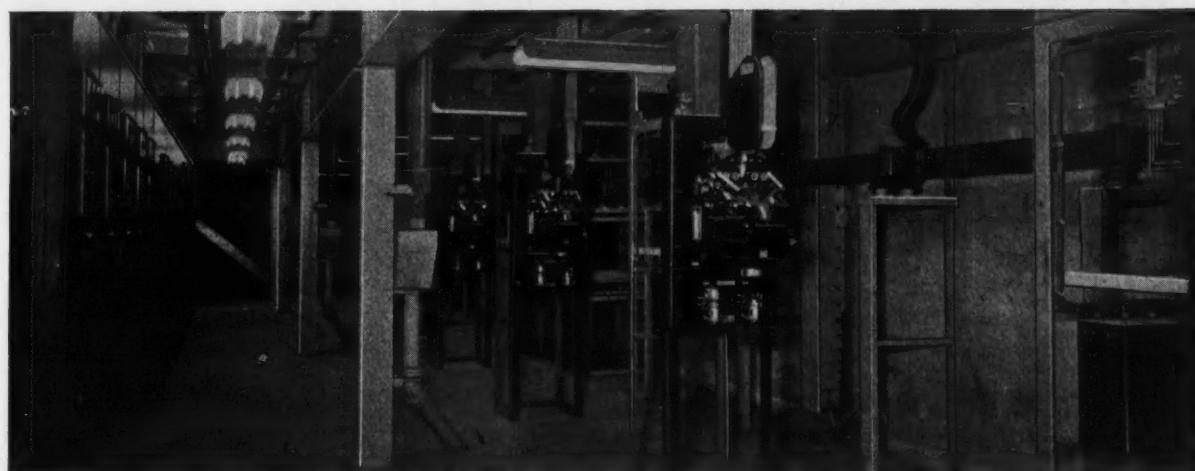
All equipment needed is included in Wyandotte's G-E rectifier system—from incoming power lines to load circuits. Upper floor (shown here) contains six ignitron rectifiers (center), with their anode breakers (left),

and auxiliary control cubicles (right). At far end of room is operator's duplex panel, which centralizes control of all rectifiers and a-c circuits, including additional equipment on floor below.

GENERAL ELECTRIC

662-37

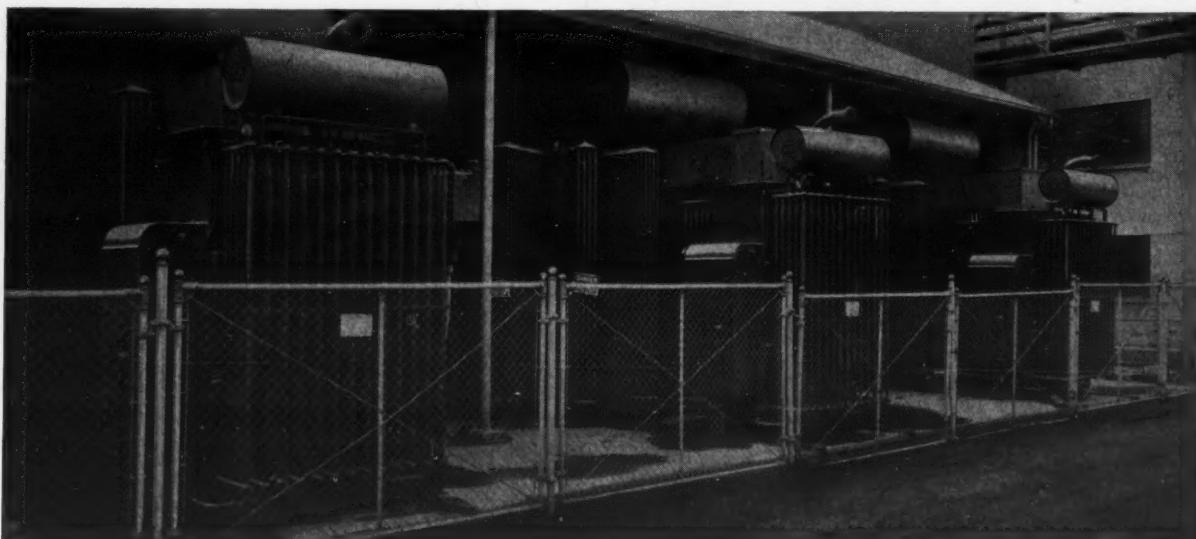
CHEMICAL-PLANT ELECTRIFICATION



Wyandotte Chemicals Corp.—in expanding for greater production—installs complete, co-ordinated G-E system for top reliability and continuity of service

Here's another chemical plant that saved time and trouble by letting General Electric co-ordinate the electric equipment for an entire process. Of modern design and functional layout, this rectifier system embodies the reliability and service continuity that continuous electrolytic processes must have.

Whatever your chemical plant's electrical problems, an experienced G-E application engineer can help you solve them efficiently, economically. Ask your local G-E office. *General Electric Co., Schenectady 5, N. Y.*



When inquiring check CP 5352 on handy form, pgs. 2-3

NEW SOLUTIONS of processing problems

in filtering and screening. Final bulletin is a reprint discussing high temperature conveyor belts of wire cloth. All are issued by The Cambridge Wire Cloth Co., Dept. CP, Cambridge, Md. When inquiring specify CP 5353 on handy form, pages 2 and 3.

Beet yard molasses treated by ion exchange becomes refined syrup . . .

process brings in substantial profits by producing material for confection makers, dairies

Problem: Layton Sugar Co., Layton, Utah, sold their beet yard molasses, both straight and from the Steffens process, as livestock feed. When sold in this form, it did not bring the price that it would if it were refined and sold as a food for human consumption. Selling the product in this way would also avoid the annoyances of price fluctuations that are especially frequent in livestock feeds.

Beet yard molasses is very viscous and is generally in the neighborhood of 80 brix, has almost 50% total sugars and about 10% mineral ash, the rest being organic constituents. It is highly colored, and has a strong, objectionable earthy odor and taste.

Solution: An ion exchange installation was constructed, consisting of one primary unit and two secondary units. Each unit consists of a cation exchanger, an anion exchanger, and a vessel containing a color adsorbent. The installation produces about 3 or 4 tons of 70 brix syrup per 24-hr day.

Prior to treatment, the molasses is diluted to 30-35 brix with water, producing a dark brown solution of a reduced viscosity that is suitable for treatment. This dilute liquid is passed through the primary color adsorbent, cation exchanger, and anion exchanger, removing 85 to 90% of the ash and producing a light brown material containing about 100 grains per gallon ionized solids in addition to the sugar.

The primary-treated material is stored and then pumped through a secondary unit where it receives the same treatment. Effluent is about 10 to 15 brix (due to inherent dilution in ion exchange), is water-white and relatively free from ash. Evaporation to 70 brix produces a light yellow syrup (about 50% transmission @ 410 mu) with less than 0.1% ash.

Results: Refined syrup offers a substantial profit and is ideal for candy manufacturers, ice cream makers, dairies, etc. It can be sold at a uniform price, little affected by market fluctuations.

Source: Illinois Water Treatment Co., Dept. CP, 899 Cedar St., Rockford, Ill. . . or for more information check CP 5354 on handy form, pages 2 and 3.

Airco Nitrogen gives positive Protection against Air Damage

For deaerating, processing, storing and packaging fats and oils, in the packaging of dehydrated foods, and to provide an inert atmosphere, use Airco Nitrogen. It gives positive protection to practically any material susceptible to oxidation and corrosion by air.

For more than a quarter century Airco has been one of the world's leading producers and purifiers of nitrogen—as well as other atmospheric gases: oxygen, argon, helium, neon, krypton, and xenon... all known throughout industry for their

high purity, unvarying uniformity and dependable qualities. This uniformity and adherence to specifications of Airco Nitrogen are definite factors contributing to its satisfactory use.

To meet your requirements, Airco can supply nitrogen of

specific types. Airco Nitrogen is supplied in 224 cu. ft. cylinders, or, if your plant is equipped with an internal pipeline, delivery in bulk may be made in Airco trailers. For further information write your nearest Airco office.



AIR REDUCTION
AIR REDUCTION SALES COMPANY • AIR REDUCTION MAGNOLIA COMPANY
AIR REDUCTION PACIFIC COMPANY
REPRESENTED INTERNATIONALLY BY AIRCO COMPANY INTERNATIONAL
Divisions of Air Reduction Company, Incorporated
Offices in Principal Cities

When inquiring check CP 5355 on handy form, pgs. 2-3

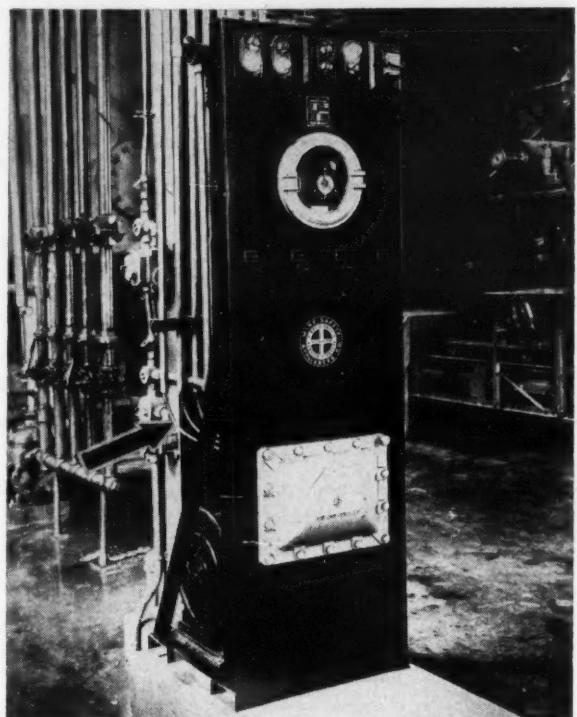
NEW SOLUTIONS of processing problems

Multi-plant gas sampling system helps safeguard workers, plant using solvent extraction . . .

detection of combustible gases and warning of unsafe concentration are features of safety program

Problem: When the Hunter Packing Company established a rendering plant at East St. Louis, Ill., over a year ago, strict personnel and building safety measures were necessary because of the hazards resulting from use of solvent extraction.

Residue resulting from the rendering of inedible animal material is washed several times with a volatile solvent,



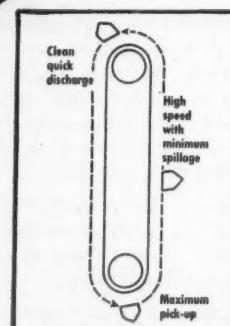
Air from 8 sampling points is drawn at the rate of 1/10 cu ft per minute through a mechanical filter to remove dust and then into the analyzing instrument. Arrow points to 3 of the 8 copper sampling tubes, which are protected by conduit. Air speed is 15' per second. When a combustible concentration is detected, the instrument automatically warns of it by red light and audible signal. Trouble spot is shown by an annunciation light system.

heptane. Then vapors are driven off with steam and condensed. One of the main hazards is that heptane, which is combustible, may escape and explode. This has caused great damage in other installations.

Solution: To guard the plant against this hazard the company selected a multi-point continuous sampling combustible gas alarm, which sounds an alarm whenever the safe limit is exceeded.

Air is drawn from 8 different locations to an analyzing instrument, which is prominently placed. A turbo-compressor vacuum pump in the unit is used to aspirate the samples. Also in the instrument is a motor-operated multi-

For more information on product advertised at right, specify CP 5357 . . . see information request blank between pages 2-3.



The next time you buy steel buckets, be sure you get LINK-BELT "HS" Buckets

Yes, you can get maximum efficiency and capacity from your centrifugal discharge bucket elevators with the use of Link-Belt advanced design "HS" Buckets.

Link-Belt "HS" Buckets give you the ultimate in centrifugal discharge bucket elevator operation... at either high speeds or nominal speeds. High bucket ends minimize spillage, while the low front lip provides efficient pickup.

"HS" Buckets last longer, too—

- Corners are reinforced by end plates wrapped around body. End plates are same gauge as bodies for added strength.
- Crimped backs give added rigidity... permit smooth, flat back surface contact.
- Smooth interior results in maximum efficiency.

"HS" Buckets, with all these advantages and low first cost, give you maximum value. Write for Book 2299.

LINK-BELT
"HS" ELEVATOR BUCKETS

LINK-BELT COMPANY: Chicago 8, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices, Factory Branch Stores and Distributors in Principal Cities.

12,367

When inquiring check CP 5356 on handy form, pgs. 2-3

IT ALWAYS PAYS TO SPECIFY

LADISH

Controlled Quality

PIPE FITTINGS

...to be sure
of sound
welds
and fast
assembly



TO MARK PROGRESS

Keeping welding costs down to a minimum and erection schedules on time...these are important advantages you can assure to any piping job by installing Ladish Controlled Quality fittings. Metallurgical controls over materials and methods provide an assurance of uniform weldability in every Ladish fitting...and thorough inspection to rigid standards of physical dimensions and geometric accuracy assures fast piping assembly.

THE COMPLETE *Controlled Quality* FITTINGS LINE
PRODUCED UNDER ONE ROOF...ONE RESPONSIBILITY

LADISH CO.

CUDAHY, WISCONSIN

MILWAUKEE SUBURB

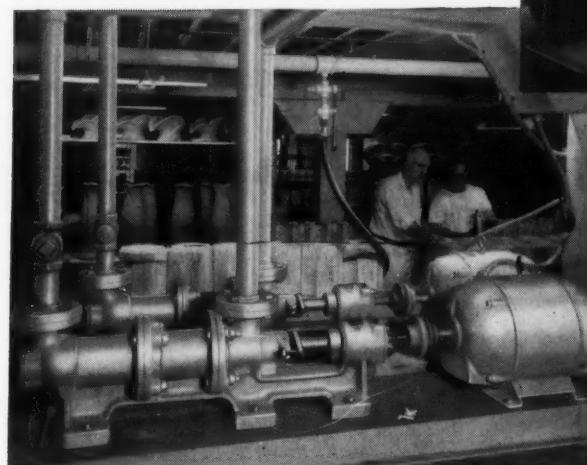
District Offices: New York • Buffalo • Pittsburgh • Philadelphia • Cleveland • Chicago • St. Paul
St. Louis • Atlanta • Houston • Tulsa • Los Angeles • Havana • Toronto • Mexico City



EVERY OUNCE OF



passes through a



Trimmers' knives last only *four months*, but the R & M Moyno Progressing-Cavity Pumps that handle highly abrasive clay for beautiful Haeger pottery are still going strong after more than *four years*—without a penny spent on repairs. Haeger Potteries, Inc., has five of these pumps—three at Dundee, Ill.; two at Macomb, Ill.—for moving the *entire* production.

LOOK AT THE SETUP. Each pump serves a complete molding floor where mixed clay is forced through a circuit with several outlets for directing into molds as desired. At Dundee—*world's largest art pottery*—this service line is 3-inch pipe, 250 feet long. 2000 molds can be filled on each floor in thirty minutes, but, usually, all are not filled at the same time, and many molds are *refilled* once or twice a day. Pumps operate intermittently and frequently.

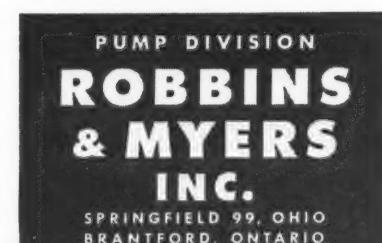
ONLY MOYNOS GIVE YOU ALL THIS! One R & M Moyno feature, particularly appreciated at Haeger, is the uni-

A typical display of world-famous Haeger pottery and Royal-Haeger lamps, and—at left—the Moyno pumps which serve two molding floors, as Arnold B. Vogel, head of molding and finishing departments, watches a filling operation. Says Mr. Vogel, "Our Moynos have been wonderful. We've had no trouble of any kind." Pumps are driven by 5-h.p. motors; deliver 50 g.p.m.



Here's a 4-year record of
PERFECT PERFORMANCE

form pressure and *steady flow* these amazing pumps deliver. It means faster, cleaner mold-filling—*without* pinholes. Moynos self-prime, resist both abrasives and chemicals, pass particles and solids in suspension, won't vapor-lock or cavitate, reverse by reversing rotation—develop positive pressures to 1000 p.s.i., without turbulence. If you have a tough pumping job, get all the facts about Moynos. They handle everything from liquids to non-pourable pastes—*without troublesome* pistons or valves. Call in your Moyno Man today, or write for Bulletin C-30-P.



When inquiring check CP 5358 on handy form, pgs. 2-3

way sampling valve enabling the unit to alternately analyze combustible concentrations.

Samples are passed across one of two heated platinum wires forming a balanced electrical circuit. If the test air contains combustible vapor, flammable components are burned on contact with the hot wire, unbalancing the electrical circuit in proportion to the degree of concentra-



A portable Explosimeter for measuring concentrations of gases and vapors below the explosive range and for indicating concentrations above the limits is employed before any major maintenance work including welding or brazing is permitted in the building. Extensive tests and inspections are made under the direction of the supervisor on duty and the plant fire department as a part of the company's safety regulations.

tion. A red warning light flashes on when the balance is upset beyond a predetermined limit. Simultaneously, an audible alarm signal is energized and an annunciation light system shows the sampling line from which the air was drawn.

Another safety measure is the use of exhaust fans in the extraction room and a large fan above settling tanks. Exhaust fans are kept in continuous operation so that a complete air change takes place every six minutes.

Throughout the plant, non-sparking tools are used and all electrical equipment, including lighting fixtures, is of the explosion-proof type. Even flashlights are explosion-proof.

Results: Economical solvent extraction with a maximum recovery of tallow, grease and solids is carried out with a high degree of safety, as shown by the plant's safety record.

When an alarm is sounded, investigation is started immediately to determine the source. For more serious emergencies another emergency alarm, operated manually or energized by the main sprinkler system valve, is sounded in the building's engineering office and the engine room, both places being occupied at all times.

Source: The Combustible Gas Alarm and the Explosimeter are products of the Mine Safety Appliance Company, Dept. CP, Pittsburgh, Pa. . . or for more information check CP 5359 on handy form, pages 2 & 3.

"KARBATE" IMPERVIOUS GRAPHITE BRAND HEAT EXCHANGERS FOR ALL PURPOSES!

The "Karbate" impervious graphite heat exchangers illustrated are used extensively as boilers, coolers, condensers, vaporizers, evaporators, heaters and absorbers in handling corrosive chemicals, either hot or cold. They *all* can be had in a complete size range. *All of them* offer the following advantages:

- Highest heat conductivity rate of the practical corrosion-resistant materials.
- Highly resistant to corrosion by acids or alkalis, hot or cold.
- Freedom from corrosion scale, as compared to metals.
- Immune to thermal shock.
- No contamination of product.
- Strong and easy to install and maintain.



Shell-and-Tube: Series 70A—Two sizes, 16.4 sq. ft., and 24.6 sq. ft. of outside surface area respectively. Tubes easily replaced in the field. Interchangeable single and double-pass construction.



Series 240A—70.6 feet of outside heat transfer surface. Easy tube replacement. Easily converted on job to single, double, or four-pass tube side flow by simple change of fixed covers. Steel shell, oversize shell connections, impingement plates and drain and vent plugs integral with shell end castings. Stainless-steel baffles assembled with steel tie rods to form protective cage for tube bundle. Removable "Karbate" tube bundle. Write for catalog sections for S-6690, S-6715 for details of applications, maintenance, sizes and characteristics of these exchangers.

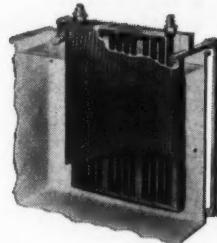
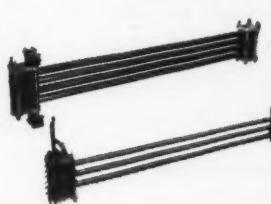


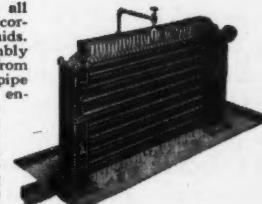
Plate heaters: Used to heat or cool corrosive liquids in tanks and vessels. Compact, completely assembled, easy to put in. Used in pickling, etching, plating and cleaning tanks. Complete size range. Models for horizontal and vertical mounting. Write for catalog section S-6620.



Style FH heat exchangers (Size 1½): Are especially recommended for tanks with solution depths of 16 inches or less. Write for catalog section S-6750.



Cascade coolers: For all cooling jobs involving corrosive gases and liquids. Complete cooler assembly may be made quickly from 4 standard items in 5 pipe sizes. Capacity easily enlarged or reduced by adding or subtracting standard sections. Compact construction to save plant room. No special supporting structure needed. Write for catalog section S-6780.



Concentric Tube exchangers: Available in two types. Series 10A is small, low-priced, gives true countercurrent. Exceptionally good for small flow rates at narrow temperature differences. Series 20A manufactured with "Karbate" inner and outer piping, and is used to transfer heat between two corrosive fluids. Both have sectional construction, can be added to or subtracted from at will. Sturdy, can be moved from place to place after assembly, adapted to any method of mounting on floor, wall, or ceiling. Write for catalog section S-6670.

The term "Karbate" is a registered trade-mark of Union Carbide and Carbon Corporation

NATIONAL CARBON COMPANY
A Division of Union Carbide and Carbon Corporation
30 East 42nd Street, New York 17, N. Y.

District Sales Offices: Atlanta, Chicago, Dallas, Kansas City, New York, Pittsburgh, San Francisco

In Canada: National Carbon Limited
Montreal, Toronto, Winnipeg

A full line of "Karbate" impervious graphite pipe and fittings

for conveying corrosive chemicals includes: "Karbate" pumps of advanced design embodying impervious graphite case, impeller, and a rotary seal which eliminates the stuffing box. Pump prices reduced up to 33%. Write for catalog section S-7000 for pipe information, S-7200 for pump information.

When inquiring check CP 5360 on handy form, pgs. 2-3

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- Starch Products

**Gentle but thorough blending
eliminates separation in
aspirin formula . . .**

Bayer uses two stainless steel twin-shell blenders that use no baffles or long drops

Problem: Due to the unusual characteristics of an aspirin formula made by Bayer Aspirin Company, over-blending of the ingredients caused separation. This separation was apparently due to a chemical reaction being initiated by heat developed by friction during blending. Neither the company's cone nor ribbon type blenders were satisfactory with the formula.

Solution: Bayer found the answer in the two 10 cu ft twin-shell blenders shown in photograph. While blending is quite thorough in this type of unit, the action is very gentle due to elimination of baffles, slid-



Two stainless steel, 10 cu ft blenders installed by
Bayer Aspirin Company

ing and long drops. Also of particular advantage in connection with this type of material are two other features of the twin-shell blender. 1) Charging openings are large, eliminating costly spillage. 2) Smooth interior permits thorough cleaning in a short time.

Results: Separation is no longer a problem with the formula. Although the twin-shell blender has not been directly compared with the cone and ribbon types as to blending time necessary on this particular formula, it is much faster than those blenders operating in the process for making standard aspirin formulations.

Source: Twin-shell blender is made by The Patterson-Kelley Co., Inc., Dept. CP, 200 Lackawanna Ave., East Stroudsburg, Pa. . . . or for more information check CP 5362 on handy form, pages 2 and 3.

**Brewery cleaning costs cut
by alkaline cleaner . . .**

use of solution to remove beer deposits also cuts cleaning time and is safer

Problem: A brewery using inhibited acid to remove beer deposits from piping and bottle fillers pumped acid diluted with three parts of water through the lines at least once a week. In addition to being a somewhat hazardous job, this cleaning operation required that fillers be disconnected from the lines for cleaning.

Solution: A one ounce per gallon of water solution of a fine, white, mildly alkaline wetting agent type of

BOISE • DALLAS • TOLEDO • DENVER • DETROIT • MEMPHIS • BUFFALO • ST. LOUIS • NEW YORK • CLEVELAND • MILWAUKEE
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When inquiring check CP 5361 on handy form, pgs. 2-3

cleaner is pumped through lines and fillers for about 2 minutes to clear the lines. Solution is then left in the entire system for 30 minutes, after which time the lines are opened and the system is flushed with hot water for 5 minutes. Lines and filling equipment are then ready for use. Cleaner can be dissolved in either hot or cold water, works well in hard or soft water.

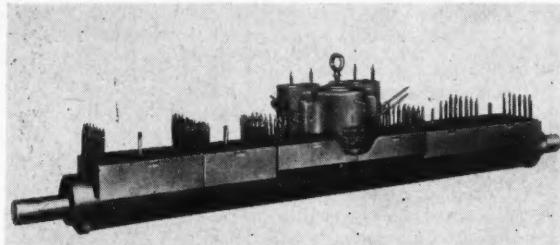
Results: Although cost of cleaning materials is not much less than that of the acid method, elimination of dismantling of the fillers has appreciably decreased overall cleaning costs. In addition cleaning time has been greatly decreased, and cleaning operation is no longer hazardous.

Source: Magnus 1DX, the cleaner used for this application, is a product of Magnus Chemical Company, Inc., Dept. CP, South Ave., Garwood, N. J. . . or for more information check CP 5363 on handy form, pages 2 and 3.

**Sheeting capacity of die upped
by maintaining plastic temp
at 800 degrees . . .**

extruding 300 pounds of plastic per hour attained
Problem: Production demanding that a 70"-long sheeting die be operated at a rate in excess of 300 lb/hr, a plastic processor was forced to find means for maintaining a plastic temperature of 800°F.

Solution: These specifications were presented to the maker of high-temperature electric heaters. Finally an assemblage consisting of six cast-in aluminum-bronze



70"-long plastic sheeting die equipped with electric heaters now maintains processing temperature of 800°F

"Thermaheaters" were installed on the die proper, and three installed on the throat assembly between the extruder and the die.

Multiple heating elements of conservative rating in each casting promote long service life for operation at full capacity. In addition, multiple elements also permit wiring for operation at reduced voltage when lower temperatures are needed, and afford zone control.

Reason for using aluminum-bronze is for high heat conductance, the design of the die being such that merely 40% of its surface is available for heat contact. Aluminum castings would be suitable for temperatures up to 750°F. In order to maintain the plastic at 800°F, the heaters operate in the neighborhood of 1000°F.

Results: Since the application of Thermaheaters to this plastic sheeting die, a processing temperature of 800°F can be maintained and production of 300 lb/hr is a reality.

Source: Heaters in this installation are produced by Thermal, Inc., Dept. CP, 3440 W. Lake St., Chicago 24, Ill. . . or for more information check CP 5364 on handy form, pages 2 and 3.

Dust into Dollars?



Buell Recovers More Valuable Dust ...Increases Dollar Return

Buell's knowledge of dust—its problems, its properties, its recovery—is world known. It is the result of years of advanced engineering and research development, devoted exclusively to the positive, profitable recovery of valuable dusts.

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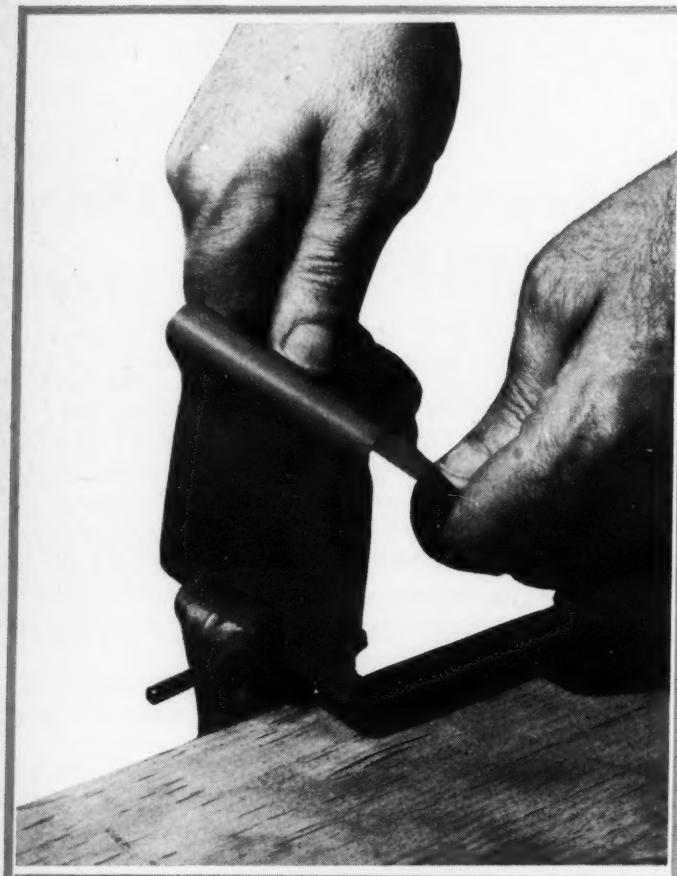
• A good start at turning dust into dollars is to write today for the Buell literature that describes and illustrates the soundness of Buell Dust Recovery Equipment. Buell Engineering Company, Suite 5026, 70 Pine Street, New York 5, N. Y.

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Engineered Efficiency in Dust Recovery

Bending Steel Plate in 180° Arc Doesn't Loosen Its Plastic Corrosion-resistant Coating

**Flexibility due to inherent properties of plastic,
not to plasticizers that leach out or harden**



Sample metal plate covered with U.S. Royalguard air drying plastic coating is bent through an 180° arc to demonstrate its flexibility and adhesion. The coating neither chips nor cracks, and can be used on steel, aluminum, concrete, hard wood, or composition board.

plastic material itself, and not due to chemical plasticizers that leach out or harden. Although it is possible to penetrate the coating with a sharp instrument, combination of good adhesion and film flexibility prevents any area from loosening, chipping, or cracking. In the event of mechanical breaks in the film, it can be easily repaired by brush or spray "touch up".

Coating requires no primer, becomes tack free rapidly at room temperatures through air drying, and minimizes corrosion creeping beneath film.

Description: "U.S. Royalguard" is intended to handle the milder corrosive conditions and, as such, supplements maker's U.S. Permobond calendered tank lining stock designed to handle severe corrosive conditions.

For those services where the coating is to be immersed, the maximum allowable temperature is 120°F. For occasional short periods of time, it may be exposed to a maximum of 160°F, but this of course will shorten the ultimate service life.

Four coats produce a film approximately 4 mils thick, and coverage is about 225-250 sq ft/gal/coat. For application to metal, surfaces should be first sandblasted, freed of grease and foreign substances, and dried. Cement surfaces should have no projections, be free from air pockets, etched with hydrochloric acid, and dried. Wood and composition surfaces should be sanded, cleaned off, and dried.

Spraying is the recommended means for application; small articles can be dipped. One hour is allowed between coats for drying with good ventilation, and a 24-hr dry is recommended prior to use thereafter.

Source: Development of the United States Rubber Company, Dept. CP, Rockefeller Center, New York 20, N. Y. . . or for more information check CP 5366 on handy form, pages 2 and 3.

USES: Finds main application for protecting steel, aluminum, concrete, hard wood, masonite and transite surfaces from splash, drip, or spray of corrosive chemicals, atmospheres, as well as weathering. In some specific services it can be used as lining for drums.

Tanks, tank cars, pipes, fittings, structural steel parts, and processing equipment are making use of the coating. Scope covers textile, sewage disposal, fertilizer, sugar, tanning, electroplating, rayon and cellophane, paper, water treating, chemical processing, photo finishing, and mining fields.

Features: Excellent film flexibility is inherent in this

Chemical Resistance of U.S. Royalguard Protective Coating

E = Excellent G = Good N = Not Recommended

	Immer-sion	Inter-mittent Service (splash, drip, spray)	Corro-sive Atmosphere
ACIDS			
Hydrochloric, up to 20%	E	E	E
" up to 37%	N	G	EE
Sulfuric, up to 50%	E	E	EE
" up to 93%	N	G	EE
Phosphoric, up to 85%	E	E	EE
Tannic	E	E	EE
Oleic	G	G	EE
Lauric	G	G	EE
Lactic	G	G	EE
Nitric, up to 10%	N	E	EE
" up to 100%	N	G	EE
Chromic, up to 25%	N	N	EE
Acetic	N	N	EE
Formic	N	N	EN
ALKALIS			
Sodium Hydroxide, up to 10%	G	E	—
" up to 10-25%	E	EE	—
" up to 25-50%	E	EE	—
Oakite, saturated	E	E	—
Trisodium Phosphate	E	E	—
SALTS			
Sodium Chloride, up to 10%	E	E	—
Potassium Permanganate, up to saturation	E	E	—
Silver Nitrate up to saturation	E	E	—
Aluminum Chloride, up to 10%	E	E	—
Aluminum Sulfate	E	E	—
Sodium Bisulfite, up to saturation	G	E	EG
Sodium Hypochlorite, 3% Cl ₂	N	E	EG
" 10% Cl ₂	N	G	GG
OILS			
Sour Crude	E	E	EEE
Paraffin Oil	E	E	EEE
Cottonseed Oil	E	E	EEE
Mineral Oils	E	E	EEE
MISCELLANEOUS			
Formaldehyde, up to 37%	E	E	EEE
" up to 50%	E	E	EEE
Ethyl Alcohol	G	EE	EE
Butyl Alcohol	G	EE	EE
Glycerin	G	EE	EE
Ethylene Glycol	G	EE	EE
Water	G	EE	EE
Gasoline	E	EE	EE
Sulfur Dioxide	N	GG	GG
Carbon Bisulfide	N	GG	GG
Hydrogen Sulfide, saturated	N	GG	GG
Ketones	N	GG	GG
Esters	N	GG	GG
Aromatic Hydrocarbons, Benzene and Toluene	N	NN	NN
Chlorinated Hydrocarbons	N	NN	NN
Phenols	N	NN	NN

Combines Properties of Plasticizer and Resin for Nitrocellulose Lacquer Films

Resinous alcohol is permanent because it doesn't evaporate from films on aging

USES: Plasticizing resin for nitrocellulose lacquer films.

Features: Combining the properties of a plasticizer and a resin, material also improves the adhesive qualities of nitrocellulose lacquer films. In tests, films formulated with this material were hard, flexible, water-resistant, and alcohol resistant. On mahogany plywood, films survived more than ten 60-minute cold check cycles of plus 120 to minus 20°F.

Can be considered a permanent plasticizing resin since it does not evaporate from nitrocellulose films as they age.

Description: Resinous Alcohol-8 is the newest member of maker's Resinous Alcohol family. It is a mixture of the mono-, di-, and tri-glycerides of rosin and fatty acids and has a small number of free hydroxyl groups. It receives its resinous characteristics from the high ratio of rosin acids to fatty acids in its glycerides.

Physically it is a light-colored, viscous, non-crystallizing liquid. At temperatures below 100°C it is fluid enough to be pumped. It is completely soluble in lacquer solvents and compatible, not only with nitrocellulose, but also with many other natural and synthetic resins and plastics and with most common lacquer plasticizers.

Source: Now in pilot plant production, drum quantities of Resinous Alcohol-8 are available for evaluation and commercial use from General Mills Research Laboratories, Dept. CP, 2010 E. Hennepin Ave., Minneapolis 13, Minn. . . or for more information check CP 5367 on handy form, pages 2 and 3.

Offers heat-sealing cement for porous or non-porous materials . . .

resists oxidation and discoloration, moisture, acids, alkalis, and oils

Uses: Permanent and strong adhesive for both porous and non-porous materials. Specifically recommended for rubber, metal, vinyls, phenolics, textiles, leather, wood, paper, or combinations of the above to one another and to themselves.

Features: Resistant to water, acids, alkalis, and mineral and vegetable oils. Resists oxidation and discoloration.

Description: Resin Cement M.E.T. is a heat-sealing adhesive coating and cement, being water-clear, colorless, and thermoplastic. Its dried film is non-tacky, non-reactive, glossy, and flexible. Moderate heat at approximately 120°F and above improves the adhesion and gloss.

Source: Development of the Alltex Rubber & Chemical Co., Inc., Dept. CP, 400 W. 219th St., New York 34, N. Y. . . or for more information check CP 5368 on handy form, pages 2 and 3.



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TRICHLORethylene

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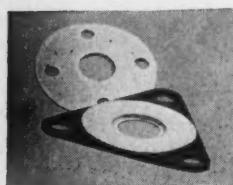
NIAGARA ALKALI COMPANY

60 East 42nd Street, New York 17, N. Y.

When inquiring check CP 5369 on handy form, pgs. 2-3

Du Pont plastic offers big savings in process equipment

Du Pont "Teflon"** tetrafluoroethylene resin, inert to almost all chemicals, serves up to 500°F., has unique non-adhesive properties.



Uses: Gaskets, packing (for pumps, valves, pistons, agitators), valve seats, non-adhesive surfaces for use with sticky materials, electrical insulation.

Features: Unexcelled chemical inertness, heat-resistance up to 500°F., low coefficient of friction, zero water-absorption. Used in

process equipment "Teflon" saves money through less maintenance, less replacement cost, increased productive capacity (through less down time), reduced wear on pistons and shafts, and simplified design; permits improvement in quality of product by eliminating contamination. Has outstanding electrical properties; unique non-adhesive characteristics for use with sticky materials.

Description: Du Pont supplies "Teflon" as molding powder, tape, and aqueous dispersions.

Demand for "Teflon" currently exceeds supply. However, we suggest you investigate its versatile properties for future application. We'll gladly discuss the availability of quantities for development work, and supply names of molders and fabricators of sheets, rods, tubes, or finished parts. For further information and booklet "Teflon" in Gaskets and Packing," write:

Source: E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Dept., Wilmington 98, Delaware.

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BETTER THINGS FOR BETTER LIVING
...THROUGH CHEMISTRY

When inquiring check CP 5370 on handy form, pgs. 2-3

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FROM ADHESIVES TO ZEINS
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When inquiring check CP 5371 on handy form, pgs. 2-3

Substitute for Styrene Will Conserve Supply of Extremely Critical Benzene

Vinyltoluene, available in pilot plant amounts at 99% purity, has twice the polymerization rate of styrene

USES: Substitute for styrene in production of synthetic rubber, polymers and latex paints. Also suggested for use in production of varnishes, plasticizers, latices and resins.

Features: Since styrene is probably the greatest consumer of benzene, use of vinyltoluene as a substitute material for styrene will help to alleviate the critical benzene supply and allow greater use of aromatics for other important chemicals.

Pilot plant quantities of an isomeric mixture of *m* and *p* vinyltoluenes are now being produced. Purity of this monomer is above 99%. Its polymerization rate is twice that of styrene and its vapor pressure is substantially lower than styrene's.

Description: Vinyltoluene utilizes ethylene and toluene as raw materials, both of which can be abundantly produced from petroleum products. It is well known that toluene can be produced more easily and cheaply from petroleum and natural gas hydrocarbons than benzene. Known refinery processing can make three to four times as much toluene per barrel of oil as benzene. Already, large amounts are being made by the hydro-forming process. Thus, with the existing coke oven toluene and synthetic toluene plant capacity (built during World War II) toluene can become more plentiful than benzene.

Properties of Vinyltoluene

% Total unsaturation as vinyltoluene (mercury acetate method)	98.8
Refractive index @ 25°C	1.5393
Specific gravity @ 25/25°C	0.8968
Flash point (Cleveland open cup), °F	140
Fire point (Cleveland open cup), °F	141
APHA color number	5
Absolute viscosity @ 25°C, cp	0.770
Surface tension @ 25°C, dynes/cm	31.0
Freezing point, °C	—82.5

The table presents some properties of vinyltoluene. Experience to date indicates that handling and storage (other than distillation) is similar to styrene. In fact, the same concentration (10 ppm) of *p*-tertiary-butylcatechol is used as inhibitor in purified vinyltoluene.

Source: Product of The Dow Chemical Company, Dept. CP, Midland, Mich. . . or for more information check CP 5372 on handy form, pages 2 and 3.

Intermediate plays role in dyes, organic synthesis . . .

sulfone shows good reactivity; is available in research quantities

Uses: Suggested as a dye intermediate and organic synthesis intermediate.

Features: Research quantities available. Good reactivity.

Description: 4,4' Dichlor 3,3' dinitro diphenyl sulfone — or bis (4-chloro-3-nitrophenyl) sulfone as it is also known — has empirical formula $C_{12}H_6O_8N_2Cl_2$, molecular weight 377.24, and assays 102% Dumas nitrogen. It is a cream colored powder melting between 193-198°C.

Source: Chemical activity of this sulfone is detailed in data sheet available from manufacturer — Merrimac Division of the Monsanto Chemical Company, Dept. CP, Everett Station, Boston 49, Mass. . . or for more information check CP 5373 on handy form, pages 2 & 3.

Lacquered polystyrene has smooth, lasting finish . . .

finish does not attack the plastic to cause cracks

Uses: Lacquer for finishing polystyrene products. Suitable for finishing toys, novelties, lamps, imitation pearls, and office and desk supplies.

Features: Believed to be the first lacquer that provides a lasting, uniform, durable, smooth coating to this plastic. Applies with standard spray equipment, gives good adhesion, and leaves a high-gloss finish that is free from crazing or wrinkles. Does not attack the polystyrene to cause minute cracks and wrinkles.

Description: Base C 5123 lacquer is available in all colors, in gloss, semi-gloss, and flats. It air dries similar to other lacquers in about 15 minutes.

Source: Development of the United Lacquer Manufacturing Company, Dept. CP, 1001 W. Elizabeth Ave., Linden, N. J. . . or for more information check CP 5374 on handy form, pages 2 and 3.

**Rare-earth elements render
high-alloy steels
hot workable . . .**

usual tearing and cracking unknown to steels containing Misch metal as alloying material

Uses: Series of high-alloy, corrosion-resistant, heat-resisting steels.

Features: Hot working high-alloy, corrosion-resistant alloys — without the usually expected tearing and cracking — are now possible since the application of Misch metal (bearing the rare-earth elements cerium and lanthanum) as an alloying material.

Procedure is expected to increase the use of high-alloy, corrosion-resistant, and heat-resisting steels formerly found to be impractical because of the limited hot workability.

Description: Maker has found that the nickel content determines the minimum and maximum allowable ranges of cerium and lanthanum which will produce hot workability — as % Ni increases, allowable range of rare-earth elements is narrowed.

New alloy series now includes Stainless AISI Types 309, 310, 316, 317, 330, as well as maker's Stainless 20



Cone test for hot forgeability. Test consists of casting a cone of the metal to be tested. Cone is heated to selected forging temperature and upset or hammered into a flat "pancake" as shown. Measure of forgeability is visual. Test can be used to determine the optimum amount of cerium to be used in a particular grade of steel, and also to determine the best range of forging temperatures. The two pancakes shown are of the exact same analysis ... except that the one on the left, relatively free of cracks and tears, contains cerium.

and austenitic valve steels. Use of Misch metal not only applies to ferrous alloys containing more than 50% iron, but also to non-ferrous alloys containing little or no iron.

Source: More details and licensing arrangements can be obtained from the Carpenter Steel Company, Dept. CP, Reading, Pa. . . . or for more information check CP 5375 on handy form, pages 2 and 3.

**Government report evaluates
synthetic rubber polymers**

Seventeen-page report describes test procedures and the effect of varying polymerization conditions on the properties of experimental synthetic rubber polymers. Emphasis is placed on improved fuel resistance and low temperature properties. To obtain PB 102184, remit \$2 (for microfilm) or \$3.75 (for photostat) in check or money order made payable to the Librarian of Congress direct to Library of Congress, Photoduplication Service, Publication Board Project, Washington 25, D.C.

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Phenols	Phthalic Anhydride	Lutidines
Cresols	Dibutyl Phthalate	Tar Acid Oils
Cresylic Acids	ELASTEX* DCHP Plasticizer	Neutral Coal-tar Oils
Chlorinated Tar Acids	"ELASTEX" 10-P Plasticizer	Coal-tar Creosote
Xylenols	"ELASTEX" 50-B* Plasticizer	CUMAR* Paracoumarone-Indene Resin
Pickling Inhibitors	"ELASTEX" 28-P Plasticizer	Carbonex* Rubber Compounding Hydrocarbon
Benzol	Phenolic Resins	Bardol* Rubber Compounding Oil
Toluol	Niacin (Nicotinic Acid)	Flotation Agents
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Naphthalene	Picolines	
Hi-Flash Solvent	Quinoline	

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When inquiring check CP 5376 on handy form, pgs. 2-3

MIPS-500

an important new plasticizer for vinyl compounds

**Low cost and desirable properties make MPS-500
an attractive plasticizer for vinyl compounds.**

MPS-500 is a stabilized, chlorinated fatty acid ester. It shows excellent compatibility with vinyl chloride polymers and copolymers, and exerts a strong plasticizing action on them.

It is flame-retardant; has excellent low migration characteristics, and imparts very good electrical properties.

Compositions containing MPS-500 show good flexibility at ordinary and low temperatures, good all-around mechanical properties and good processing characteristics.

Particularly valuable is the high permanence of the compositions, showing very low plasticizer loss on heating and on extraction with water and oil.

Used alone, MPS-500 compares closely with tricresyl phosphate in efficiency. However, it is superior to the latter in low-temperature flexibility. Its use with other plasticizers makes possible a wide range of desirable properties.



SEND FOR THIS NEW BULLETIN

BULLETIN 35 contains properties of MPS-500; comparisons with other plasticizers; effects of aging by heat, water and gasoline; recommended stabilizers; and typical formulations and uses. Write today, on your company letterhead, for a copy.

From the Salt of the Earth

HOOKER ELECTROCHEMICAL COMPANY

15 FORTY-SEVENTH ST., NIAGARA FALLS, N. Y.

NEW YORK, N. Y. • WILMINGTON, CALIF. • TACOMA, WASH.

BENZOIC ACID • CHLOROTOLUENE • SODIUM BENZOATE • CAUSTIC SODA • MURIATIC ACID • CHLORINATED PARAFFIN • CHLORINE

When inquiring check CP 5377 on handy form, pgs. 2-3

MATERIALS

Clad steel strip simplifies silver brazing . . .

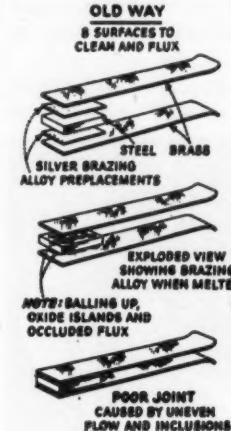
eliminates pre-placement of silver alloy in conventional brazing practice

Uses: Steel strip for fabrication by brazing.

Features: Strip is clad with silver brazing alloy on one or both sides, and in any thickness and melting range, to simplify brazing of steel joints. Eliminates pre-placement of silver alloy in conventional brazing practice that often leads to joint failure due to the alloy spreading unevenly over joint surface.

Strip pre-diffused with silver brazing alloy helps control the flow of metal during brazing and eliminates the necessity of cleaning off any overflow on unwanted fil-

TYPICAL SILVER-BRAZED ASSEMBLY



lets. Heating cycle is reduced since there is no need for dependence upon unpredictable capillary flow to distribute the brazing alloy. Tedious fluxing operations prior to brazing are considerably reduced.

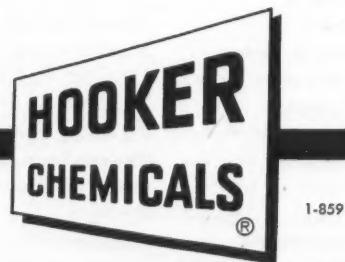
Description: "Braz-Clad" low carbon steel strip is available in all thicknesses down to .005" and in any width up to 4". This manufacturer also produces Braz-Clad copper, brass, nickel-silver, nickel, beryllium-copper, and silver.

Source: Announcement of the American Silver Company, Inc., Dept. CP, 36-07 Prince St., Flushing, N. Y. . . or for more information check CP 5378 on handy form, pages 2 and 3.

Data on 61 gases presented

Paper bound, 8½ x 11" book is made up of individual data sheets on commercially important gases. Material covered, for each gas, includes table of principal physical properties, principal uses and industrial importance, toxicity, safety precautions, and handling methods. Further material is given for some gases; reference material is indicated.

Pressure-temperature charts are given in cases where these characteristics are important. Cylinder valve outlet charts are given at the end of the book. These specify, with drawings, the various standard fittings. Reference to this chart is made throughout the book. Seven of the data sheets included in the book are published here for the first time. To obtain "Gas Data Book", remit \$2.00 direct to The Matheson Co. Inc., Dept. CP, Joliet, Ill. When inquiring specify CP 5379 on handy form, pages 2 and 3.



1-859

MATERIALS

Has cyano-activated methylene group . . .

cyanoacetamide functions both as nitrile and amide

Uses: Being employed in synthesis of vitamins and barbiturates. Has been suggested as an intermediate for special resins (some used for textile fiber treatment), substituted piperidines and pyridones, new pharmaceuticals and general organic synthesis.

Features: Functions both as a nitrile and an amide. Due to the highly reactive methylene group, the chemical reacts with aldehydes and ketones in several ways to give various products.

Description: As furnished by this manufacturer, cyanoacetamide ($\text{CNCH}_2\text{CONH}_2$) has a purity of 99.0%, melts at 119.0-122.0°C, and has 0.05% maximum ash. One gram dissolves completely and freely in nine grams distilled water.

Certain condensation products and resins useful in treatment of textile fibers and as purifiers for gases and liquids are obtained by condensing formaldehyde and certain amino-cyanoacetamides. The amino-cyanoacetamides are obtained directly from cyanoacetamide and alkylene diamines.

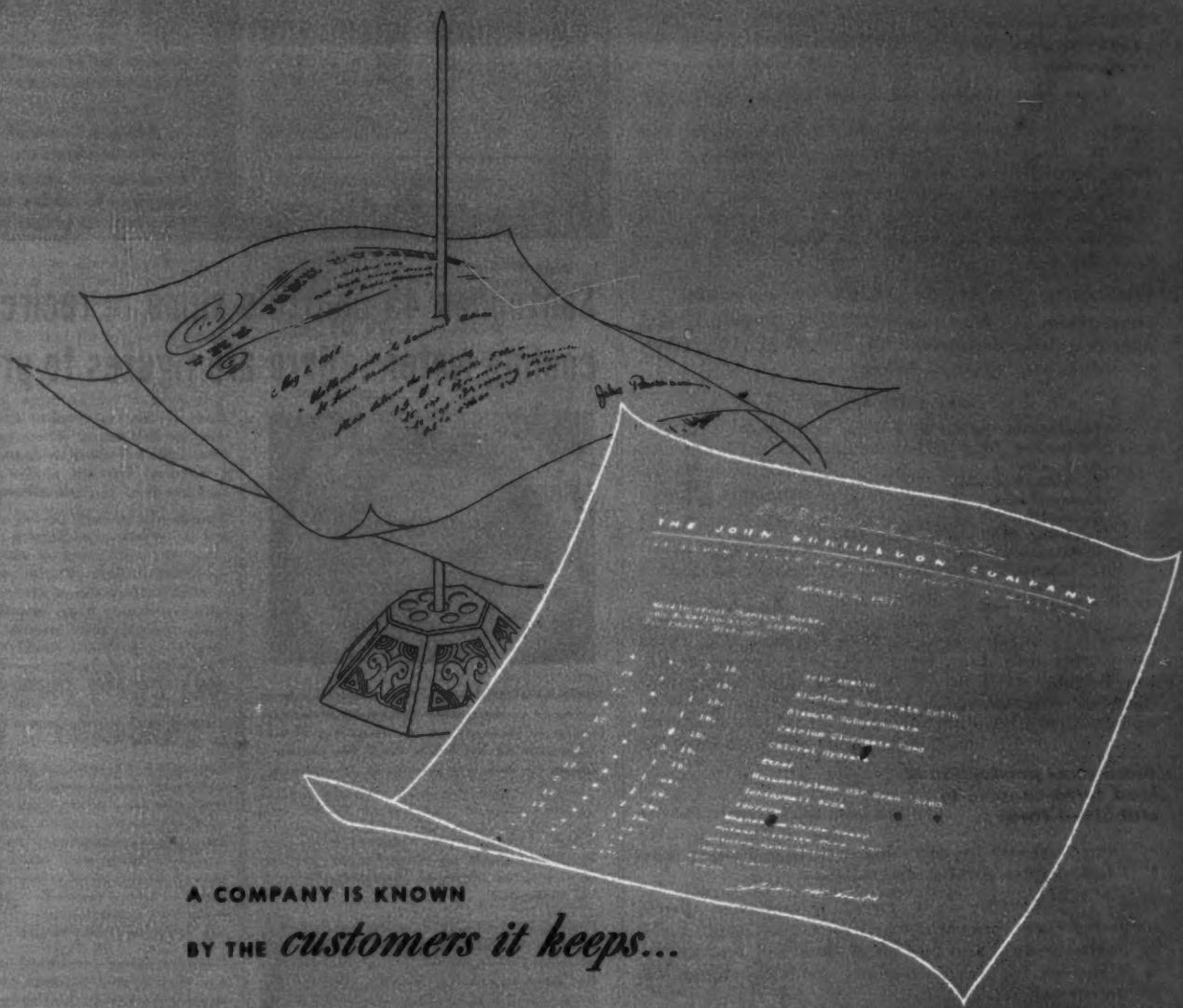
Ethyl α -acetyl- γ -cyano- β -phenoxy-methyl monoamide is made from cyanoacetamide, phenoxy acetaldehyde or its acetal, and acetoacetic ester. This compound has been mentioned as a pharmaceutical intermediate.

Two pyridone isomers can be made by the catalyzed reaction of α , γ -diketone with cyanoacetamide. This type reaction is used to produce intermediates in the synthesis of Vitamin B₆ (Pyridoxine). Similar products can be made using α -hydroxy or alkoxy methylene ketones, or ketimines.

Malononitrile, which finds use as an intermediate in synthesis of Vitamin B₁ and in synthesis of barbiturates, can be prepared by dehydration of cyanoacetamide in the presence of phosphorous oxychloride or phosphorous pentachloride and salt.

Source: Product of Kay-Fries Chemicals, Inc., Dept. CP, 180 Madison Ave., New York 16, N. Y. . . . or for more information check CP 5380 on handy form, pages 2 and 3.

For more information on product advertised at right, specify CP 5381 . . . see information request blank between pages 2-3.



A COMPANY IS KNOWN
BY THE *customers it keeps...*

Of all the ways to measure success in business, perhaps the most revealing is *how long you keep your customers*.

For 84 years Mallinckrodt has been uncompromising in its adherence to a policy of honorable dealing, dependable service and quality products; and as a result has earned the confidence of the industrial users of fine chemicals through the years. Our files are filled with the names of customers who, with their antecedents, have been with us for half a century or more. The age-yellowed cards in our active customer files underscore the importance of this basic business philosophy.

MALLINCKRODT CHEMICAL WORKS • St. Louis • New York • Montreal



ORGANIC INTERMEDIATES • INORGANIC
CHEMICALS • CHEMICALS FOR ELECTRONIC
USES • METALLIC SOAPS • ANALYTICAL
REAGENTS • PHOTOGRAPHIC CHEMICALS

* MANUFACTURERS OF FINE CHEMICALS FOR INDUSTRY * SINCE 1867 *

Ortho-nitrobiphenyl, low-priced plasticizer that's efficient... and available

If costs and availability of plasticizers are headaches in your business, we suggest you investigate Monsanto's ortho-nitrobiphenyl. ONB is efficient as a primary plasticizer or as an extender, and it is immediately available in any quantities you need. It sells for only 14½ cents a pound in truckloads or carlots.

Ortho-nitrobiphenyl (also known as ortho-nitrodiphenyl) is compatible with cellulose esters and ethers, polyvinyl chloride, polyvinyl butyral, polyvinyl acetate, styrene, rosin and rosin esters, modified phenolic resins, oil-soluble alkyd resins and vegetable oils. This wide compatibility, plus its low hydrolysis rate and low price, makes ONB an unusually attractive plasticizer.

Most resins, both natural and synthetic, can be plasticized with ONB. The amount of required plasticizer varies with the resins and the use of the finished product. The volatility of ortho-nitrobiphenyl is less than diethyl phthalate and greater than dibutyl phthalate.

Ortho-nitrobiphenyl is readily soluble in carbon tetrachloride, mineral spirits, pine oil, turpentine, benzene, acetone, glacial acetic acid and perchlorethylene. It is, itself, a good solvent.

For technical information on ONB, contact the nearest Monsanto Sales Office or mail the coupon for a copy of Monsanto Technical Bulletin No. OD-102.

Nonflammable heat-transfer medium

For more than eight years, Monsanto AROCLOR® 1248 (chlorinated biphenyl) has proved an ideal nonflammable, liquid-phase heat-transfer medium. AROCLOR 1248 can be used continuously at temperatures up to 300° C., and at pressures of 30 pounds per square inch or less. Mail the coupon for details.

SEND INFORMATION:
 Nontoxic Santicizers.
 Santomerse 80. AROCLOR 1248.

SEND LITERATURE:
 Bulletin OD-102 (ONB).
 Booklet, Santomerse No. 1.

SEND SAMPLE:
 Santophen 45. Diethyl Succinate.

Santomerse No. 1, all-purpose detergent and wetting agent, serves many industries

To name the industries that have use for Monsanto Santomerse® No. 1 would amount to compiling a directory of American manufacturers. Versatility of the product makes it a valuable assistant in many operations.

Santomerse No. 1 is effectively used for cleaning, penetration, dispersion, emulsification and spreading.

Santomerse No. 1, an anionic detergent, has a minimum of 40% active alkyl aryl sulfonate, the remainder being principally inorganic builders. This combination has been found to be best for high efficiency and economy.

Usefulness of Santomerse No. 1 covers a wide range of applications because the product is effective in hard or soft water, in acid or alkaline baths, in hot or cold solutions. Santomerse No. 1 can be used in operations where the pH is critical because it assumes the pH of the solution in which it is used.

There may be many places where Santomerse No. 1 can improve efficiency and help you to turn out better products. Why not investigate these possibilities? Mail the coupon for a copy of Monsanto's

New detergent offers you flexibility in formulating

Monsanto now has available in commercial production a new detergent and wetting agent—Santomerse 80. Santomerse 80 contains the same active ingredient as Santomerse No. 1, but is double strength. It has 80% of active alkyl aryl sulfonate, the remaining 20% being principally inorganic builders.

Santomerse 80 is a synthetic detergent in concentrated form which gives more flexibility in formulating. It is recommended for specialty compounds where low inorganic content is desired. Its high concentration of active alkyl aryl sulfonate permits a reduction in bulking of the finished detergent mixtures, where this characteristic is desirable. In addition, it reduces the requirement for warehouse space and material handling.

Santomerse 80, available in flake form, can be blended easily with phosphates, carbonates and silicates. For complete information, mail the coupon.

booklet "Santomerse No. 1 . . . All-purpose wetting agent and detergent," which contains a great deal of technical information which may be useful to you.

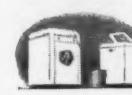
A few of the many uses of Santomerse No. 1



Metal Industry



Railroad Car Cleaners



Household Cleaners



Dehairing Hogs



Dairy Cleaners



Agricultural Sprays

These half-dozen uses of Santomerse No. 1 may suggest applications in your business. If you want detailed information on specific uses in your industry, contact the nearest Monsanto Sales Office or write Monsanto Chemical Company.

MATERIALS

a cellulose sponge. Merely wipe off with the reverse side of the sponge; no rinsing required. Has no odor and is non-toxic and non-irritating to the hands.

Description: "Jewel-Brite" is a synthetic detergent with special cleaning agents and a polyglycol solvent that promotes rapid cleaning action. The paste is white in color and is furnished in 1-lb glass jars.

Source: A 2-oz test sample of this waterless cleaner is available from Jewel Laboratories, Dept. CP, 72 Orange St., Brooklyn 2, N. Y. . . or for more information check CP 5385 on handy form, pages 2 and 3.

1-coat lacquer withstands temperatures to 300°F . . .

retains its color and is resistant to peeling and cracking at this heat

Uses: Lacquer is intended for finishing apparatus that is subject to temperatures as high as 300°F. Specific applications include lamps, stage and photographic lighting apparatus, etc.

Features: In this temperature range, the lacquer yields a finish that retains its color and is resistant to peeling and cracking. One coat is sufficient.

Description: C 5173 is applied by spraying in a single coat, giving excellent adhesion to all metals, including steel and aluminum. It air dries in 15 minutes.

Source: Development of the United Lacquer Manufacturing Corporation, Dept. CP, 1001 W. Elizabeth Ave., Linden, N. J. . . or for more information check CP 5386 on handy form, pages 2 and 3.

Latest plastic film makes: strong, flexible bags and drum liners . . .

fabricated by electronic welding; items available without DO ratings

Uses: Being used by many chemical processing and packaging concerns for various types of drum liners and bags.

Features: Reported to have unusual strength and flexibility. Fabricated items are available without DO ratings.

Description: Drum liners and bags of this copolymer plastic film are electronically welded and tested, and are being manufactured in various sizes and shapes for practically every kind of steel or fibre drum, carton or case.

Source: Announcement of the Protective Lining Corporation, Dept. CP, 22 East 17th St., New York, N. Y. . . or for more information check CP 5387 on handy form, pages 2 and 3.



*Reg. U. S. Pat. Off.

1700 South Second Street, St. Louis 4, Missouri

Please send, without cost or obligation, information, literature or samples as indicated at the left.

Name..... Title.....
Company.....

Street..... Zone..... State.....
City.....

When inquiring check CP 5384 on handy form, pgs. 2-3

Sharples

DOUBLE CHECKED

 FROM RESEARCH
 TO INDUSTRY

ETHYLAMINE



This primary amine is a versatile compound of value as a reactant or solvent for many processes.

The more important uses, as well as those suggested in the technical literature, are given below to aid you in an evaluation of the usefulness of Sharples Ethylamine.

PRESENT AND SUGGESTED USES

AGRICULTURE: Preparation of dry salt of 2,4-D acid.

CERAMICS: Deflocculating agent for increasing strength of clay bodies.

SOLVENT: Selective solvent in petroleum and vegetable oil refining. Solvent for wide range of organic compounds.

EMULSIONS: Intermediate for fatty acid soaps used as emulsifying agents.

PLASTICS: Condensing agent and intermediate for resins. Preparation of amides (plasticizers).

RUBBER: Synthesis of vulcanization accelerators. Stabilizer for latex.

TEXTILES: Intermediate for surface-active agents, dyestuffs and sizing compounds.

PROPERTIES

Color
 Specific Gravity
 @ 20/20° C.
 Monoethylamine
 Content
 Flash Point
 Molecular Weight
 (anhydrous)

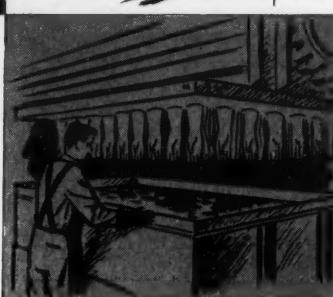
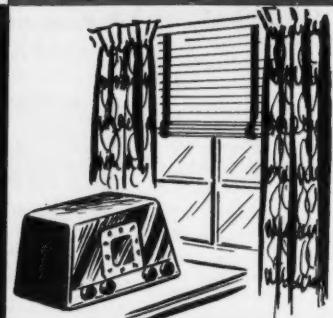
Clear and Water White
 0.78-0.80
 70% (min.)
 Below 0°F.
 45.08

Address Inquiries to Department D

Sharples Chemicals Inc.

SALES OFFICES:
 350 Fifth Avenue, New York • 80 E. Jackson Blvd., Chicago
 West Coast: Martin, Hoyt & Milne, Inc.
 San Francisco, Los Angeles, Seattle, Portland
 Canada: Shawinigan Chemicals Ltd., Montreal, Toronto
 Export: Airco Company International, New York

When inquiring check CP 5388 on handy form, pgs. 2-3



25th YEAR

MATERIALS

Corrosion resistance of steels
 like types that use 50% more critical alloying elements . . .

should assure supply in view of present shortages
Uses: Series of electro steel alloys falls in the "A" classification of corrosion resistance when exposed to varying concentrations of sulfuric acid solutions at room temperature, and in the "B" classification when exposed to these solutions at elevated temperatures.

Alloys are weldable, and some can be used as filler material and are applicable not only to fusion welding but also to "Weldbraze" (maker's method of joining and building up materials).

Features: Steels make use of approximately 50% less critical alloying constituents than other steels of comparable corrosion resistant performance. They do not contain Co, Cr, Ti, or Zr, and use considerably less Ni than conventional alloys. This should extend assurance of their availability.

Maker compares the cost of these steels with conventional corrosion and heat resistant alloys, including non-ferrous alloys.

Description: "Super Rustfree" steels have a yield-strength/tensile-strength ratio of 75,100/95,300 psi in the hot rolled, fully annealed condition — as compared with standard austenitic stainless steels which have a yield-strength/tensile-strength ratio of about 40,000/80,000 psi.

A fully austenitic, non-magnetic structure is maintained even after severe cold working — for instance, cold finished wire of .004" diameter and of 300,000 psi tensile strength is dead austenitic and non-magnetic. Hardness of steels in annealed condition is 82 RB. Elongation is 49% and reduction in area 64.5% in the fully annealed condition.

Tensile values are higher than those for stainless 25:12, 18:8 Mo, 18:10 Ti, and 18:10 Cr.

Source: Announcement of the Uniworld Research Corporation of America, Dept. CP, 1302 Ontario St., Cleveland 13, Ohio . . . or for more information check CP 5389 on handy form, pages 2 and 3.

Emery mixes with concrete to yield floors that take a 'beating' . . .

stretches floor life, reduces maintenance, improves with wear to expose new emery particles

Uses: Emery aggregate, when incorporated in a concrete mix, forms an armored surfacing for new or old concrete floors. Also suitable for use as a floor patch. Recommended for use in processing areas, loading docks, and other areas where floors take a 'beating'.

Features: Stretches floor life and reduces maintenance. Resistant to the effects of oils, fats, sugar, organic wastes, and most acids. Withstands constant moisture and steam. Not affected by intense heat when mixed with heat-resistant cement. Laboratory tests show that the floors in which this emery is used as an aggregate will withstand crushing loads up to 14,500 psi without noticeable effect. Its tensile strength of 1048 psi increases resistance to "tearing" caused by the tractive pull of heavy loads.

Flooring actually improves with wear, since more of

MATERIALS

the hard emery particles become exposed. Retaining its non-skid surface permanently, it permits quicker stops and starts of power trucks and faster handling of loads.

High degree of smoothness to which the floor can be laid can assist materially in reducing wear and tear on handling equipment, and minimizes bumping and jolting of finished goods.

Description: Emery aggregate consists of hard, sharply irregular particles which pack and interlock. When mixed with cement and water, these particles form a hard, densely cohesive mass that sets to extreme hardness, known as an "Emeri-Crete" floor. Particles have a natural affinity for cement that insures a permanent bond, a characteristic that is particularly important in floor areas subject to oil soaking. Firm bonding also minimizes the effects of water and freeze-ups in outdoor applications.

Dense bond results in part from care employed in blending the various sizes of emery in the aggregate — ranging from fines to maximum particles of $\frac{3}{8}$ ". This reduces the chances of voids in the final mix.

On all floors, new or old, a minimum layer of $\frac{3}{4}$ " of emery aggregate is recommended to insure proper distribution of the largest gradations of emery in the aggregate. In resurfacing, the area to be covered is scarified and the old surface removed to a minimum depth of $\frac{3}{4}$ ", or as far as necessary to get below oil and grease penetration.

Conventional methods of laying concrete are followed in installing an emery aggregate floor. One bag (100 lb) of emery aggregate is mixed with 2 bags of Portland cement, using not more than $3\frac{1}{2}$ gal of water for each bag of cement. Machine mixing is recommended.

After the mix is spread evenly on the base course, it is screeded and the edges well tamped with a heavy roller or by hand tamping until maximum compaction is gained. Surface is then floated with a disc type machine, bringing sufficient moisture and fines to the surface for hand troweling.

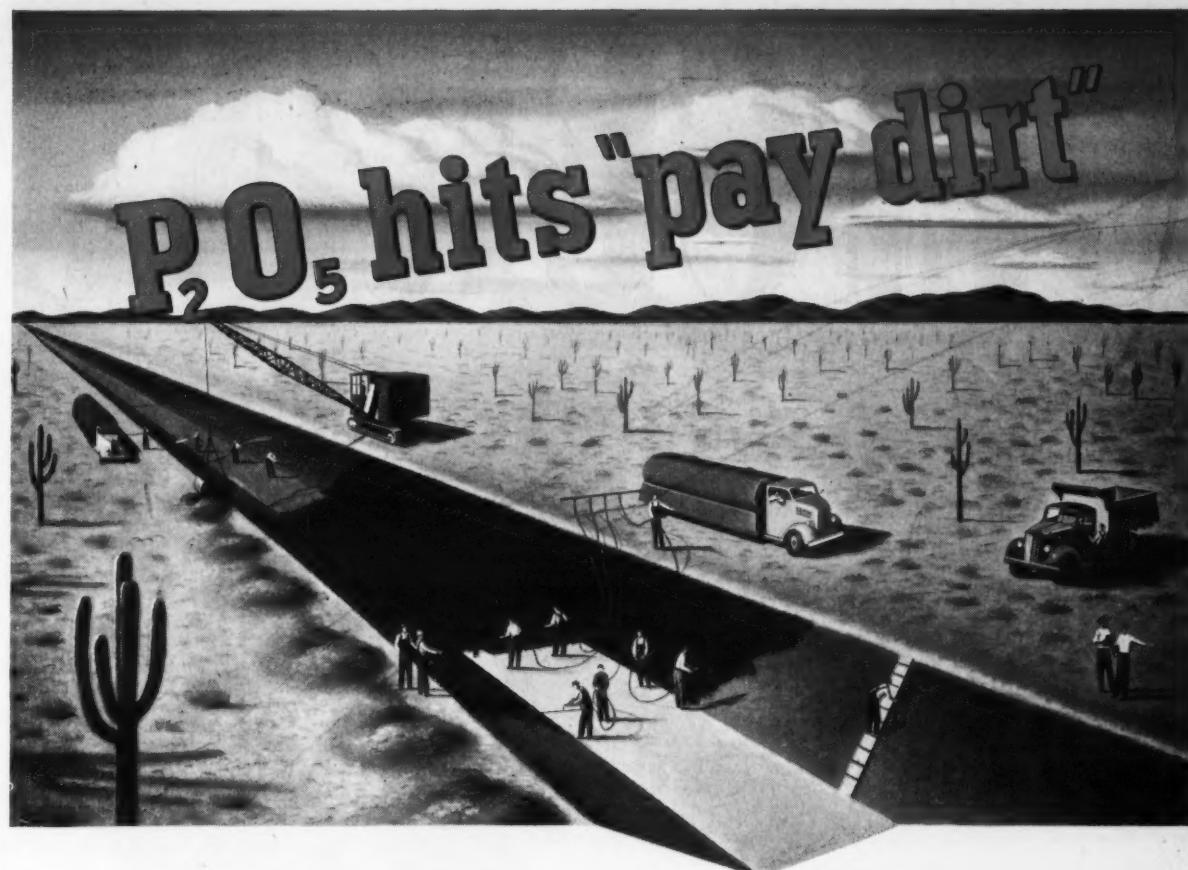
Although a naturally non-skid surface results, it can be roughened before setting with a power or wood float or by hand brushing. Permanent bond results between the emery aggregate and the concrete base on which it is laid.

Source: Cortland emery aggregate, used to lay "Emeri-Crete" flooring, is a product of the Walter Maguire Company, Dept. CP, 60 East 42nd St., New York 17, N. Y. . . or for more information check CP 5390 on handy form, pages 2 and 3.

Explains diecasting lubricant

Diecasting machine cannot be easily kept lubricated with petroleum products because of the high temperatures involved and the tendency of the lubricant to be squeezed out of the die cavity. Manufacturer recommends using colloidal suspension of graphite in water or oil for this purpose. "Colloidal Graphite" is issued by Acheson Colloids Corp., Dept. CP, Port Huron, Mich. When inquiring specify CP 5391 on handy form, pages 2 and 3.

For more information on product at left, specify CP 5392 . . . see information request blank between pages 2-3.



Petroleum Industry Benefits from Use of Victor Chemical—Victor phosphoric anhydride is being used profitably as a catalyst in the preparation of asphalt for large irrigation ditches. The P₂O₅ eliminates softening at high temperatures, prevents brittleness during low temperatures, and saves costly replacement or repairs.

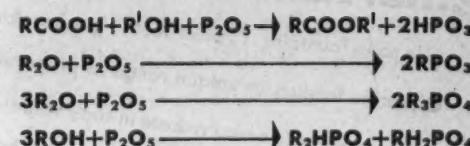
This new catalytic type asphalt also provides additional benefits. Now it is possible to increase irrigation and reclaim arid land which previously was impractical due to high construction costs.

You, too, may find the answer to an unusual product problem with highly reactive Victor phosphoric anhydride. P₂O₅ and other versatile Victor chemicals merit your consideration. Please write for technical data or other information, on your company letterhead.

Other applications in which Victor phosphoric anhydride has proved useful :

- GAS DRYING AGENT
- REAGENT IN METHYL METHACRYLATE RESINS
- PRODUCTION OF ORGANIC PHOSPHATES

TYPICAL REACTIONS OF VICTOR PHOSPHORIC ANHYDRIDE



VICTOR CHEMICAL WORKS

141 West Jackson Boulevard • Chicago 4, Illinois
A. R. Maas Chemical Co., Division • 4570 Ardine Street, South Gate, California

When inquiring check CP 5393 on handy form, pgs. 2-3

GLYCERINE



IMPORTANT
FOR
FOODS...



...IMPERATIVE FOR NATIONAL DEFENSE!

In soda fountains . . . bakeries . . . butcher shops and grocery stores . . . you'll find versatile Glycerine lending its unique range of properties to hundreds of foods and beverages. Glycerine compares to carbohydrate in food value—and it's an important humectant, sweetener, solvent and preservative besides!

Important for foods, yes—and so vital is Glycerine to our defense efforts that it was one of the first six chemicals to be put under inventory control!* In the days to come, you may find supplies of Glycerine temporarily restricted . . . for the most part because this valuable product is on the job helping meet military demands for foods . . . explosives . . . and a host of other vital products.

*By Government authorities responsible for inventory control under the National Defense Act.
GLYCERINE PRODUCERS' ASSOCIATION
295 Madison Ave., New York 17, N.Y.

When inquiring check CP 5394 on handy form, pgs. 2-3

MATERIALS

Phosphate coating replacing cadmium and zinc in many rust-proofing uses . . .

salt spray tests indicate corrosion resistance in excess of 36-hr Army specification

Uses: Rust-proofing process for steel and iron surfaces. Recommended as a replacement for cadmium and zinc coatings. Applicable to fasteners, springs, hardware, hand tools, appliances, sheet metal parts, clips, links, etc.

Features: Standard salt spray tests indicate a corrosion resistance well in excess of the 36 hours required in US Army Specification 57-0-2c, Type II, Class B.

Description: "Perm-Cote" is a phosphate coating material. When iron or steel parts are immersed in a solution of the material, surfaces are converted into a dark gray, uniform, dense, non-metallic phosphate coating. After rinsing, the highly absorbent coating is impregnated with a rust-proofing oil known as Perm-Oil, giving the parts a permanent corrosion-proof layer that is dry to the touch.

Results of tests made by Government and private industry labs are available from maker.

Source: Detrex Corporation, Dept. CP, Detroit 32, Mich. . . . or for more information check CP 5395 on handy form, pages 2 and 3.

Solutions of fast color bases announced for textile dyeing, printing . . .

reported to be the most practical way of supplying colors yet devised

Uses: Series of five fast bases for textile dyeing and printing. Can be used wherever naphthols and fast color bases are employed, such as in printing of cottons and rayons, etc.

Features: Available in solution form, color bases are reported to be the most practical way of supplying colors yet devised.

Description: "Spectrolenes" are maker's fast color bases completely diazotized and stabilized to prohibit coupling with naphthols in solution, or with naphtho-lated material, until the stabilizer is broken down. The base is released from the stabilizer by the action of acid or acidified steam, such as an acid agar. This permits complete coupling of the naphthol with the fast color base.

Loss of color value due to prolonged storage is cut to a minimum. The bases are mixed fresh with naphthols in the plant where they are actually applied, and freshness of the combination promotes brilliance and color value.

Spectrolenes available are Red KB, Red RC, Scarlet 2G, Orange HD, and Blue B. Number of naphthols produced and distributed by this maker total 16. Combinations of these with each fast color base offer a broad range of color possibilities, limited only by the utility of certain shades.

Bases are supplied in 450-lb drums.

Source: Development of the Hilton-Davis Chemical Company, Division of Sterling Drug Inc., Dept. CP, Cincinnati, Ohio . . . or for more information check CP 5396 on handy form, pages 2 and 3.

MATERIALS

Producing carbazole synthetically in quantity lots . . .

insured supply as against coal tar produced product

Uses: Basic raw material for the hydrone series of dyes; useful in the manufacture of explosives and in many organic syntheses.

Newer uses include interaction with acetylene to form vinyl carbazole, alkylation to form lubricants, and nitration and halogenation to make insecticides. Direct applications include use as an antioxidant for rubber, and as an inhibitor of rancid odors in synthetic detergents.

Features: Being produced synthetically in commercial quantities. This fact should insure the supply of the product which has not been reliable with the usual coal tar method of production.

Description: Maker's Synthetic Carbazole ($C_{12}H_9N$) has a molecular weight of 167 and a minimum purity of 97%. It boils at approximately 353.5°C , and initial melting point is 245°C . Product is insoluble in water, slightly soluble in alcohols and aromatic hydrocarbons, and very soluble in pyridine bases.

Source: Product of the Reilly Tar & Chemical Corp., Dept. CP, Indianapolis, Ind. . . . or for more information check CP 5397 on handy form, pages 2 and 3.

Wax data given

Compatibility, solubility and other data are given for manufacturer's products used in polish and protective finish materials. Bulletin 222 is issued by Velsicol Corp., Dept. CP, 333 East Grand Ave., Chicago 11, Ill. When inquiring specify CP 5398 on handy form, pages 2 and 3.

Lacquer is discussed in factual leaflet

Two-page leaflet points out lacquer is unlikely to be in short supply when other finishes are hard to get. Also covers versatility, military uses, and hot-spray application which conserves material. "Some Facts You Should Know About Lacquer" is issued by Hercules Powder Co., Inc., Dept. CP, Wilmington, Del. When inquiring specify CP 5399 on handy form, pages 2 and 3.

For more information on product at right, specify CP 5400 . . . see information request blank between pages 2-3.

If you're looking for smoother leathers with a "rounder" and "fuller" feel . . . if you want faster more complete penetration and all-around better tannage investigate the advantages of using Heyden SODIUM FORMATE in your chrome tanning. Its use is constantly increasing because it cuts processing time and costs decreases acid harshness of the bath and produces leathers of high uniformity and quality.

The advantages of Heyden Sodium Formate neutral white crystalline powder superior quality, exceptionally high purity, resistance to caking are also valuable in its use in the dyeing industry in production of water-resistant wallpapers and as a chemical intermediate.

SODIUM FORMATE

Heyden Sodium Formate is shipped in 300 lb. fiber drums.

Samples and further information forwarded upon request.

HEYDEN CHEMICAL CORPORATION
393 Seventh Avenue, New York 1, N. Y.
CHICAGO • PHILADELPHIA • SAN FRANCISCO • DETROIT • PROVIDENCE

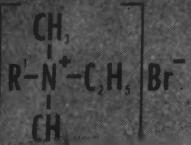
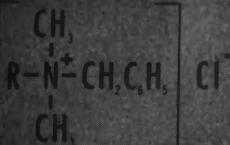
BENZALDEHYDE • BENZOATES • BENZYL CHLORIDE • BROMIDES
CHLORINATED AROMATICS • CREOSOTES • FORMALDEHYDE
FORMIC ACID • GLYCEROPHOSPHATES • GUAIACOLS
HEXAMETHYLENETETRAMINE • MEDICINAL COLLOIDS • METHYLENE
DISALICYLIC ACID • PARAFORMALDEHYDE • PARAHYDROXYBENZOATES
PENICILLIN • PENTAERYTHRITOLS • PROPYL GALLATE • RESORCINOL
SAUCYLATES • SALICYLIC ACID • STREPTOMYCIN

FORMIC ACID (90% and 85%)

Important to the metal plating, rubber, dye, paper, leather, textile, drug and perfume industries—is shipped in 125 lb. carboys and 500 lb. stainless steel drums.



Serving Industry through Finer Chemicals



ONYX QUATS are SAFE!

TOXICITY TEST DATA

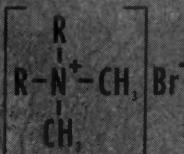
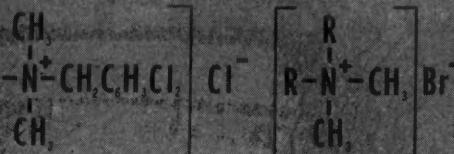
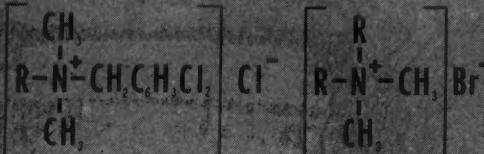
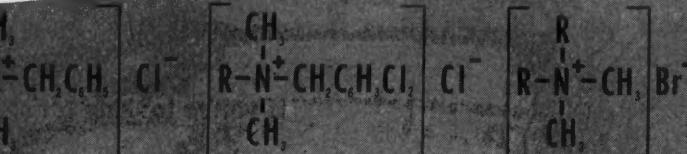
These four Onyx Quaternaries have been exhaustively investigated by an independent biological laboratory to determine these questions of toxicity and irritation. Their findings have shown conclusively that all four are non-toxic, non-irritating and non-sensitizing in all use-dilutions of 1-1000 or weaker, and that there is no danger of cumulative toxic action due to chronic ingestion of any residues left on food equipment due to inadequate rinsing. These findings are the result of . . .

1. Acute and sub-acute toxicity on guinea pigs, white rats and dogs.

2. Chronic toxicity tests based on daily ingestion of sub-lethal, but moderately heavy dosages, carried out on guinea pigs for one year, and on white rats for two years.

3. Skin irritation and sensitization tests made on 200 humans.

We welcome your comments on these questions of sensitization and toxicity, and shall be glad to cooperate with you in answering any misconceptions you may run into.



SAFE . . . Because They've Been Tested for Toxicity.

SAFE . . . Because They're Uniform Chemical Compounds.

SAFE . . . Because They Do Not Deteriorate in Storage.

SAFE . . . Because Application Techniques are Field-Proved.

Onyx has always been a leading factor in the production of quaternary ammonium salts. We make a greater variety of these compounds than any other manufacturer. Some of these are of interest to research departments. Others are used in highly specialized fields. Four of the Onyx Quats, however, are of broad interest in the field of sanitization, algae control, fungicidal treatments and deodorization. Each of these four Onyx Quats has been tested for toxicity and proved for application values in the fields to which they apply. Here they are . . .

BTC* — Alkyl dimethyl benzyl ammonium chloride. The most widely used cationic bactericide and deodorant. Sold in 50% aqueous solution to disinfectant and germicide manufacturers for dilution and/or incorporation in their own products.

TETROSAN — Alkyl dimethyl 3,4 dichloro benzyl ammonium chloride, plus alkenyl dimethyl ethyl ammonium bromide. In extensive use as a disinfecting, deodorizing and preventive-antiseptic in veterinary and livestock medicines. Also used in pharmaceuticals for topical applications. Sold in 60% aqueous solution.

IOTHAN Q15* — Lauryl isoquinolinium bromide. An excellent fungicide. Widely used in the formulation of compounds for use in the control of athlete's foot and dandruff. Sold in 20% aqueous solution.

ONYXIDE* — Alkenyl dimethyl ethyl ammonium bromide. The most effective algaecide now available. In wide use in swimming pools, cooling water, air-conditioning systems, etc. Sold as a 75% concentrate in isopropanol or propylene glycol.

*Trade Mark Reg. U.S. Pat. Off.

If you are interested in any one of these particular "quats," please ask for data. Onyx BTC is covered in a very thorough technical handbook which also outlines the major characteristics of the quaternaries.



MATERIALS

Announces series of wrappings, protective coatings for pipe lines . . .

includes five specialized protective coatings, three specialized wrappings

Uses: Series of protective coatings and wrappers for pipe lines. Coatings include "dopes" for hot and cold application by hand and machine — for use next to pipe, over wrappings, and for patching and reconditioning.

Wrappings are for underground pipe and are applied over protective coatings by hand, stationary machine, or by traveling machine.

Features: Coatings offer advantages of ease of application, freedom from 'holidays', resistance to mechanical damage, and durable protection against chemical, bacterial, and electrolytic action.

Wrappings exhibit good mechanical and dielectric strength, are completely impervious to water and water vapor, and are unaffected by soil chemicals and bacterial action.

Description: Five protective coatings are offered: 1) "Innercoat", hot-applied next to pipe, 2) "Outercoat", hot-applied over wrapping, 3) "Primecoat", cold-applied inhibitor and bonding agent, 4) "Graycoat", cold-applied for patching and reconditioning, and 5) "Redcoat", cold-applied to pipe or wrapping.

Three types of "Mummy-Wrap" wrapping include: 1) 'Mono-Ply', tough, strong, light, water-resistant, 2) 'Duo-Ply', heavy wrapper for use with hot-applied "Outercoat", 3) 'Tri-Ply', aluminum-core wrapper for use with hot and cold coatings.

Source: Development of The Trenton Corporation, Dept. CP, Wolverine Bldg., Ann Arbor, Mich. . . or for more information check CP 5402 on handy form, pages 2 and 3.

2 allylic brominators being offered in quantity lots . . .

one has 56% active bromine content; other has good solubility; both react similarly

Uses: Allylic brominators, with major uses anticipated in the steroid field. Also for brominating side-chain methylene groups in preference to the ring. Expected to be useful specific oxidizing agents.

Features: Now being offered in commercial quantities. Active bromine of 56% in *di*- compound should be of particular interest.

Description: 3-Bromo-5,5-dimethylhydantoin and 1,3-dibromo-5,5-dimethylhydantoin have been named "Monobromantin" and "Dibromantin", respectively, for obvious reasons. These compounds react very much like N-bromosuccinimide, and differ little from each other in their general reactivity. Greater solubility of the *Mono*- compound, and higher active bromine content of the *di*- compound, suggest specific applications for each. Probably the most useful reaction of the bromantins is the allylic or Ziegler bromination. Bromination of side chains without attack upon the aromatic nucleus is possible with both reagents. Ketones are also brominated in the alpha position in 50 to 80% yields. The foregoing reactions are catalyzed by exposure to peroxide or light.

Where activating influences are present in aromatic

onyx

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INDUSTRIAL DIVISION

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In Canada: Onyx Oil & Chemical Co., Ltd., Montreal, Toronto, St. Johns, Que.
West Coast Representative: E. S. Browning Co., San Francisco, Los Angeles

For Export: Onyx International, Jersey City 2, N. J.

When inquiring check CP 5401 on handy form, pgs. 2-3

MATERIALS

compounds, nuclear substitution may occur preferentially. High content of active bromine in Dibromantin, plus generally good yields mentioned above, opens potential applications in the fields of vitamins and hormones.

Some of the physical properties are outlined below:

MONOBROMANTIN DIBROMANTIN

Molecular weight	207.03	285.95
Active bromine, %	38.6	55.9
Color	white to buff	
Odor	mild bromine	

Source: Development of Arapahoe Chemicals, Inc., Dept. CP, 2800 Pear St., Boulder, Colo. . . or for more information check CP 5403 on handy form, pages 2 & 3.

Controls majority of foam problems in paper making . . .

liquid agent is easily handled; solutions are stable

Uses: Liquid type defoaming agent for application in paper manufacture. Point of addition should be where the paper stock and defoamer will be thoroughly mixed — usually at the consistency regulators or Bird screens.

Features: In liquid form, defoamer is easy to handle. Stability of solutions is such that they can stand several days with no harmful effect. Freezing has no effect on efficiency. Mixes well with hard or soft water at any temperature, and is unaffected by pH of systems.

Although a single defoaming agent cannot provide absolute control for all paper mills, this agent is reported to offer successful control of foam in the great majority of cases.

Description: De-airex 506 is a clear amber colored oil of medium viscosity, weighing about 7.6 lb/gal. It disperses immediately when poured into water with moderate agitation, and at the recommended concentration, produces an emulsion which is highly stable.

Final solution can be made up at the point of application by adding the desired amount of De-airex 506 to an empty drum and filling with either hot or cold water. Concentration is usually about 2% or 1 gallon of the agent to 50 gallons of water. A thick solution can be made up and diluted at the point of application; however, the final solution here usually requires straining.

Found effective in eliminating air bubbles in the sheet on the Fourdrinier wire — especially important in glassine type papers where air bubbles cause thin spots, and consequently lower quality papers.

Source: Development of E. F. Houghton & Co., Dept. CP, 303 W. Lehigh Ave., Philadelphia 33, Pa. . . or for more information check CP 5404 on handy form, pages 2 and 3.

Stainless steel corrosion data

Sixteen-page book contains data on corrosion resistant types of stainless tubing and pipe. In addition to providing data by type of corrosive at various concentrations, book describes general types of corrosion. Intergranular, galvanic, atmospheric, and pit-type corrosive conditions are described. "Corrosion Notebook" is issued by Alloy Tube Div., The Carpenter Steel Co., Dept. CP, Union, N. J. When inquiring specify CP 5405 on handy form, pages 2 and 3.



Spotlight on SERVICE

American industry has the productive capacity . . . the skilled manpower . . . machinery . . . engineering ability . . . experienced management. Give it raw materials, and the finished products will roll off the assembly line in greater amounts than ever before. That's a service job that Celanese is doing for many industries—producing volume quantities of organic chemicals that are basic materials in the manufacture of plastics, textiles, adhesives, laminates, paints, and finishes. Employing the most advanced methods in production, Celanese is operating on a round-the-clock schedule to meet the ever-increasing demand for these organics.

The modern Celanese chemical plant near Bishop, Texas, located in the heart of the gas fields, draws on nearby sources of natural gas to produce these

organic chemicals—assuring production continuity. Celanese also serves industry through experimental laboratories and pilot plants . . . a nationwide distribution system . . . and technical data and assistance backed by a generation of experience in petroleum chemistry.

Celanese Corporation of America, Chemical Division, Dept. 505-G, 180 Madison Avenue, N. Y. 16.

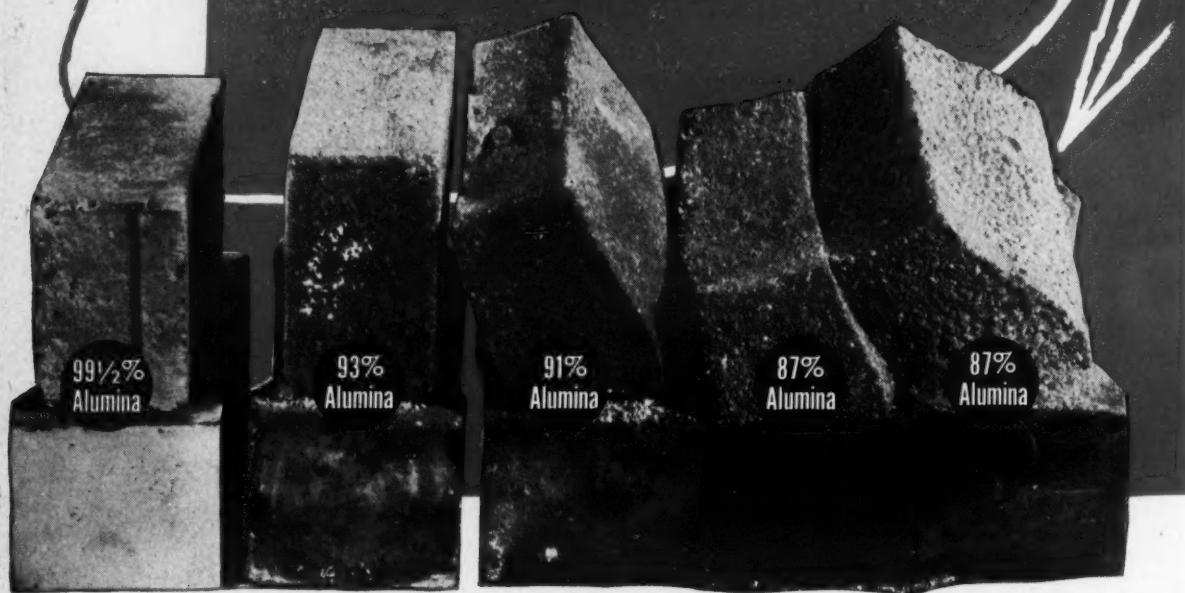
*Reg. U. S. Pat. Off.

ACETIC ACID • ACETALDEHYDE • FORMALDEHYDE • PARAFORMALDEHYDE • ACETONE • BUTYL ALCOHOLS • METHANOL
NORMAL PROPANOL • BUTYLENE GLYCOLS • DIPROPYLENE GLYCOL • PROPYLENE GLYCOL • PROPYLENE OXIDE • TRICRESYL PHOSPHATES

When inquiring check CP 5406 on handy form, pgs. 2-3

Down time costs more

than good refractories



Modern operators are using refractories fortified with ALCOA Alumina to increase the output of their metallurgical furnaces, chemical processing kilns, glass tanks and other high-temperature equipment. They know that down time costs more than good refractories, and refractories fortified with ALCOA Alumina considerably reduce down time!

The increased stability and high-temperature resistance provided by ALCOA Alumina is clearly shown in the specimens illustrated above. All are alumina-content brick, and all were held at a temperature of 3400° F. (Cone 40, flat) for four hours. From left to right, the alumina content of each brick is: 99½%, 93%, 91%, 87% and 87%. You can see how important even a little extra ALCOA Alumina is to the life of a refractory.

(Photo and data: Richard C. Remmey Son Co.)

Alcoa Chemicals



ALUMINAS and FLUORIDES
ACTIVATED ALUMINAS • CALCINED ALUMINAS • HYDRATED ALUMINAS • TABULAR ALUMINAS • LOW SODA ALUMINAS
ALUMINUM FLUORIDE • SODIUM FLUORIDE • SODIUM ACID FLUORIDE • FLUOBORIC ACID • CRYOLITE • GALLIUM

When inquiring check CP 5407 on handy form, pgs. 2-3

MATERIALS

Unusual alloy exhibits some valuable chemical and physical properties . . .

defies rust, resists corrosion, functions as moving part without lubricant, remains cool in machining

Uses: Applications for alloy are found in dry bearings, pressure die-casting, and where a free-machining metal, welding rod that doesn't require use of flux, or heat dissipation is required. For use in cast or machined forms.

Features: Defies rust, resists corrosion, functions as a moving part without lubricants, and remains cool while being machined. Can be made from non-critical materials (scrap), a fact that should assure its supply these days.

Description: "Chemalloy" is an alloy of metals and chemicals — produced by bringing together a molten metal alloy and a wet chemical mass. Result is a substance that can be melted and remelted similar to ordinary metals. Defying accurate quantitative analysis, a typical semi-quantitative analysis shows about 90% zinc, 0.7% tin, and some copper and nickel. Not recommended for use in sheet metal form where it might be rolled or drawn.

PROPERTIES OF CHEMALLOY

Hardness, Brinell	92
" Rockwell B	60
Tensile Strength, psi	50,000
Specific Gravity, gm/cc	6.95
Liquefaction Temp., °C, initial	400
" " final	450

Has very slight magnetic characteristics of zinc, machines and saws readily, shows no porosity and no evidence of graphite or organic material. A 19-hr test in which a 20% salt spray was in contact with the metal gave slight surface discoloration but did not penetrate the metal. Immersion in 5% HAc for 24 hours darkened the surface without penetration.

Source: Chemalloy is a development of Chemalloy Associates, Dept. CP, Bldg. 10, Gillespie Airport, Santee, Calif. . . or for more information check CP 5408 on handy form, pages 2 and 3.

Masonry made water repellent without sealing pores . . .

silicone base liquid impervious to oxidation, prevents efflorescence, applies by brush or spray

Uses: Water repellent for uncoated exterior masonry walls. Recommended for use on brick, concrete, concrete block, stucco, stone, and marble surfaces. Effective on asbestos shingles, unglazed tile and masonry previously painted with water-mixed paints.

Features: Because of its silicone content it is unlike conventional waterproofing compounds — it doesn't close up masonry pores. Instead, it coats the pore walls with silicone and allows the masonry to breathe. It is impervious to oxidation and prevents unsightly efflorescence. Since it stops water from carrying stains into the masonry, dirt and grime remain on the surface where they can be washed off.

Description: "Monoseal" is a thin liquid that penetrates $\frac{1}{4}$ to $\frac{3}{8}$ " into the masonry surface. It is a transparent, colorless, silicone base compound that does not alter the surface appearance in any way. It applies by either brush or spray, and merely one coat is required.

MATERIALS

When applied over masonry joints, Monoseal seals out moisture and prevents disintegration caused by freezing water. It eliminates tuck-pointing, and keeps moisture out of stucco hairline cracks. It is especially recommended for use after sandblasting.

Source: Product of Dept. M-1 of The Monroe Company, Inc., Dept. CP, 10703 Quebec Ave., Cleveland 6, Ohio . . . or for more information check CP 5409 on handy form, pages 2 and 3.

Solvent chemicals held by sealing compound . . .

recommended for use with harder-to-hold materials; no leaks, pliable for disassembly

Uses: Sealing compound for threaded joints, flanged surfaces, and tank interiors. Holds the ordinary substances expected from conventional compounds and, in addition, the harder-to-hold materials such as:

Carbon tetrachloride
Trichloroethane
Chlorobenzene
Ethylene dichloride
Benzene
Toluene
Xylene
Butane
Propane

Chloroform
Freons
Methylene chloride
Methyl chloride
Perchloroethylene
Ortho-dichlorobenzene
Cumene
Gasoline
Jet engine fuels

Features: "Leak Lock" resists these materials and still remains pliable and flexible enough to permit easy disassembly.

Source: Development of the Highside Chemicals Company, Dept. CP, 10 Colfax Ave., Clifton, N. J. . . or for more information check CP 5410 on handy form, pages 2 and 3.

Use 1/2 as much of this agent when blowing sponge rubber as you would NaHCO, . . .

treated to resist water, flows freely under adverse conditions of storage and handling

Uses: Blowing agent for production of sponge rubber.

Features: Has been chemically processed to resist water absorption (caking) and to flow freely under adverse conditions of storage and handling. Uniform particle size provides fast, even dispersion throughout the rubber, improving quality and reducing rejects.

Tests indicate that one part of this agent is equal to 2 parts of sodium bicarbonate. Blow is complete and even. Leaching is held to a minimum and premature blow is eliminated. Non-toxic, non-discoloring, and odorless.

Description: "Ansul Blo" is a bicarbonate type material that may be employed to produce sponge rubber with such synthetics as GR-S and some of the neoprenes. There has been slight accelerating action noticed in standard formulations when using this agent; however, this should be confirmed with the specific formula to be used.

Source: Samples of blowing agent are available from manufacturer, Industrial Chemical Division, Ansul Chemical Company, Dept. CP, Marinette, Wis. . . or for more information check CP 5411 on handy form, pages 2 and 3.

HAVE YOU FULLY EXPLORED

THE VERSATILE ANTAROXES*?

NEW uses, new applications for the Antaroxes—the non-ionic Antara surfactants—are being established almost every day. Their excellent wetting, dispersing, emulsifying, detergent and general surface-active properties make them useful in many fields. Here are a few surfactant applications where members of the Antarox family may prove of value . . .

AGRICULTURAL INSECTICIDES & HERBICIDES

The success of these new materials for making stable emulsions and dispersions of the new insecticides and herbicides is outstanding. They help suspend insecticide or herbicide powder in the spray liquid, then make the liquid spread on the foliage, greatly increasing effectiveness.

CHEMICAL PROCESSING — Surface-active agents emulsify mineral oils, insecticides, cutting and quenching oils, are particularly useful when emulsions must be acid-stable. They act as plasticizers and binders for waxes, rubber, ceramics, yeast cakes, cosmetics, polishes.

COMPOUNDED DETERGENTS — Powder, paste and liquid preparations for use in home and industry have increased manyfold with the aid of synthetics due to their more efficient cleansing, particularly in hard water areas.

DAIRY — Nontoxic, odorless, and fast-acting, synthetic detergents reduce formation of milkstone, act as germicidal agents, rinse better than soap. In bottle washing, they eliminate scum, act as lubricant to reduce scuffing of bottles, lengthen their life.

DRUGS & COSMETICS — Cream-type lotions owe their existence to synthetic emulsifiers; synthetics are especially useful when lotions contain fruit juices, require acid-stable additives. Shampoos use these materials, as do many pharmaceutical products.

FOODS — Sandless spinach is obtained by new wetting agents that make it easier to remove dirt. Also used for washing fruits free of insecticides. Still under experiment is use in fruit-peeling, where synthetic materials are combined with alkalis to

produce a compound that lifts off skins, removes a minimum of fruit.

LEATHER — Surface-active agents aid in pickling, tanning, and fat-liquoring, greatly reduce wetting time for dried hides and skins by dispersing protein compounds and aiding penetration of liquids. They help in grease removal, permit acid scouring of fleeces.

LUBRICATION — In lubricants, the new synthetics act as pour-point depressants, emulsifiers, wetting agents. They help in wire drawing, stamping, and rolling of metals. Where cleaning as well as lubrication is necessary, a single synthetic may do the work of two other compounds.

METAL CLEANING — Almost every type of metal cleaning can use surface-active agents. They reduce cleaning time and concentration of alkali required, prevent formation of scum, assure better contact between metal and metal-treatment solutions used in later operations.

METAL WORKING — Emulsifiers improve cutting and quenching oils; wetting agents act as buffing assistants, promote spreading of soldering fluxes. Some go into wire drawing and metal rolling lubricants.

PAINTS, DYES & INKS — Wetting agents aid in grinding, facilitate pigment dispersion, reduce viscosity, promote penetration of ink into paper, spreading of paint on surfaces. They also help in paint, dye and ink removal where their action is similar to detergency (cleaning).

PAPER — Synthetic detergents and wetting agents are used in conditioning and scouring felts, as pitch-dispersing agents, as dye-levelers. They are also used to increase flexibility and absorbency of paper towels and blotters.

PETROLEUM — Hydrochloric-acid solutions used to reopen oil wells (by dissolving limestone which blocks oil flow) penetrate better, act faster, when surface-active agents are added. Petroleum industry can also use them as de-emulsifiers, poly-

merization agents, lubricants, emulsifiers.

PLASTICS — Synthetics promote penetration of impregnating compounds. As an ingredient of plastic-resin adhesives, they increase stability and promote bonding action. In addition, they act as mold lubricants and assure more uniform dispersion of fillers and pigments.

POLISHES & WAXES — As in cosmetics, cream-type furniture, floor, automobile and shoe polishes (oil in water emulsions) owe much of their growth to synthetic emulsifiers. In materials like these, synthetics make up only 5 to 10% of compound, but have big effect on performance.

RUBBER — Wetting agents prevent adhesion in milling operations, help insure uniform dispersion of carbon black and other fillers, improve penetration and spreading of coating and impregnation compounds, help stabilize latex, are foaming agents for sponge rubber.

TEXTILES — Surface-active agents follow textiles from the carding room all the way to the laundry. In spinning they're emulsifiers, antistatic additives, spreading agents. They help in sizing, scouring, dyeing, finishing and have many other uses.

WATER PAINTS — Surfactants with emulsifying and dispersing properties are useful for making emulsion paint compositions.

AND IN MANY OTHER FIELDS — such as building materials, ceramics and glass, filtering, fire extinguishing, lumber and wood products, mining, plant cleaning and rug and upholstery cleaning.

* * *

Extensive research staffs and facilities support the development and application of all Antara Products — available to work with you in the improvement of an existing product or the development of a new one. Your inquiry is invited—without obligation. It will bring a prompt opinion as to whether one of the Antara Products may be adaptable to your needs. Kindly address your inquiry to Department 83.

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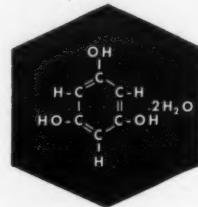
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In Canada: Chemical Developments of Canada Limited, Leaside, Toronto 17

When inquiring check CP 5412 on handy form, pgs. 2-3

Quality FINE CHEMICALS

PHLOROGLUCINOL

In addition to being a coupler in the dye field and developer for diazotype reproduction, it has potential value in many other applications.



Crystalline material varying in color from tan to cream, dependent upon grade (commercial or technical). Low in ash and heavy metals. Somewhat soluble in water, soluble in alcohol and ether.

A versatile coupling agent . . . active ingredient in formulations for the development of acetate black dyes . . . a resin intermediate . . . additive for thermosetting plastics . . . developer in diazotype direct positive reproduction process.

Working samples available

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Plant and Office . . .
RINGWOOD, ILLINOIS

When inquiring check CP 5413 on handy form, pgs. 2-3

MATERIALS

Non-caking ammonium nitrate applies as fertilizer with conventional equipment . . .

Prilling turns trick — no more clogging of feed chutes in fertilizer applicators

Until now, in spite of all efforts made toward producing a completely dry product free from all traces of moisture, ammonium nitrate had a tendency to cake and form one large mass so solid that it could not be broken up into adequate sizes suitable for passing through conventional farm machinery.

A prilled type of ammonium nitrate being produced at the Jayhawk Works of the Spencer Chemical Company is an answer to this problem. It is uniform in size and free-flowing, and is reported to have excellent storage. Prill means nugget.

The production process is described as follows: Ammonium nitrate solution is concentrated in a pair of large vacuum evaporators to something like 95%. Concentrate is piped to the top of 185-foot prilling towers, maintaining exact pressure, temperature, and concentration conditions. Sprayed downward through the tower, little round uniform prills form during the downward flight. Prills pass into a cone at the tower's bottom and out onto a 72-inch wide belt. They are of uniform size and are about like #4 shot used in a shot gun.

Removed from bottom of tower, prills are ready for drying to remove approximately 4% moisture. Although solid, they are very tender and subject to breakage by handling or quick temperature change. Drying takes place in a series of large cylindrical drums rotating around their horizontal axis. Dryers are equipped with lifting flights and the humidity is drawn counter-current to the passage of prills.

Coming from the last drying stage, prills have less than 0.1% residual moisture and are firm and strong. Remaining step to make fertilizer grade ammonium nitrate is to admix with 3% diatomaceous earth so that it will remain free-flowing from the time it is placed into storage till the time the farmer places it in his machinery for application to the soil.

(Summary of detailed information received from the Spencer Chemical Company, Dept. CP, Dwight Bldg., Kansas City, Mo. . . or for more information check CP 5414 on handy form, pages 2 and 3.)

Offers Cu-NH₄-F complex for evaluation as rot, mildew, termite-proofing agent . . .

ten times as much copper (as CuSO₄) required to give wood same protection afforded by complex

Uses: Copper ammonium fluoride complex is offered for evaluation as a termite and rot-proofing agent for wood, and as a mildew-proofing agent for textiles.

Features: Studies with a variety of woods indicate that the complex, when dissolved in water and diluted to 0.5% copper, exhibits excellent penetration characteristics. After drying, the wood shows resistance to leaching superior to samples treated with zinc chloride or copper sulfate. Stake tests run over a period of more than 5 years indicate that protection conferred by the complex is greater than that obtained by treatment with zinc chloride. Effects of this treatment are not due

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Present Company

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Main Product

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Rating of Company

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MATERIALS

solely to the deposition of copper, since about 10 times as much copper in the form of copper sulfate was required to confer protection equal to the complex.

Dry formulation represents an improvement over liquid ammonium fluoride solutions in that dilutions as low as 0.04% copper can be made without the necessity of adding ammonium hydroxide in order to maintain stability.

Description: "Pennsalt CAF" copper ammonium fluoride complex is a free-flowing, water soluble powder. Wood may be sprayed, soaked, brushed, or pressure impregnated with solutions prepared from it. Textiles may be soaked or padded. Treatment may follow vat, mineral, or sulfur dyeing — according to Joint Army-Navy Specification JAN-D-504 which lists it as suitable for after treatment of duck and twill.

Source: Pennsylvania Salt Manufacturing Company, Market Research Division, Dept. CP, 1000 Widener Building, Philadelphia 7, Pa. . . . or for more information check CP 5416 on handy form, pages 2 and 3.

Tallate now comparable with naphthenate, octoate driers . . .

good drying power and light color, reliable metal content, storage stability, odorless

Uses: Driers for paint formulations. Used as substitutes for naphthenates during World War II.

Features: Combine excellent drying power and light color for production of uniform, controlled products. Reliable metal content, stability in storage, freedom from objectionable odor, and wide range of compatibility with paint vehicles assure acceptable usage comparable with naphthenates and octoates. In almost all formulations these driers can be substituted pound for pound for naphthenates, even though they are slightly more viscous.

Description: Improved tallate driers by this maker — called "Witalls" — have the following typical properties:

Witalls Tallate Driers

	6% Cobalt	24% Lead	6% Manganese
% Metal	6.0+0.1	24.0+0.1	6.0+0.1
Viscosity (G-H)	C	J	K
Color	Purple	13	18
% Non-volatile	72.3	77.0	78.0
Specific Gravity	0.970	1.203	0.976
Lb./Gal.	8.1	10.0	8.1
Solvent	Mineral Spirits		
Flash Point, °F	100+	100+	100+
Solubility in			
Linseed (1:19)	24 hr+	6 hr+	24 hr+
Temp Stability	Good	Good	Good

The 6% cobalt and 6% manganese are packaged in 110-lb kegs and 425-lb drums . . . 24% lead in 125-lb kegs and 500-lb drums.

Source: Development of the Witco Chemical Company, Dept. CP, 295 Madison Ave., New York 17, N. Y. . . . or for more information check CP 5417 on handy form, pages 2 and 3.

Specifications on Nylon, Teflon

Folder gives specifications and sizes for Nylon and Teflon rods, strips, and tubing. Issued by The Polymer Corporation of Pennsylvania, Dept. CP, Reading, Pa. When inquiring specify CP 5418 on handy form, pages 2 and 3.

Briefs

From recent literature

Anti-clogging fuel oil compositions result when the undoped fuel oil is mixed with the barium or similar metal salt of nonyl phenol disulfide and a naphthenic oil sodium sulfonate. The additives are effective in preventing the sludging and clogging generally exhibited by fuel oils when wet or under oxidizing conditions.

A nonfoaming detergent, suitable for use in dishwashing machines, results when nonyl phenol polyglycol ether is mixed with soap in the ratio of about 3 to 1. The foaming tendency of the mixture is far less than that of either component alone.

Surface active agents having bactericidal properties are formed by reacting nonyl phenol with epichlorohydrin and a tertiary amine in alcoholic solution. The type of product obtained is exemplified by 3-(tert-nonylphenoxy)-2-hydroxypropyltriethylammonium chloride.

Extreme pressure additives for lubricating oils are prepared by condensing dinonylphenyl dithiophosphoric acid with a chlorinated fatty acid. A 10% solution of the product in ordinary lubricating oils enhances their load carrying properties.

Breaking of petroleum emulsions of the water-in-oil type is accomplished by subjecting the emulsion to the action of an oxyalkylated phenol resin. The phenol resin is formed by reacting nonyl phenol, admixed with other phenols, such as cardanol and metacresol, with formaldehyde.

These developments are abstracted from recent publications or U. S. patents. They may suggest other applications of Jefferson Nonyl Phenol in your products or processes.

Jefferson's new chemical

{ intermediate
stabilizer
plasticizer

NONYL PHENOL

(Formerly Alkyl Phenol C-9)

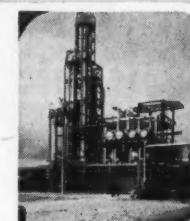
Properties of Jefferson Nonyl Phenol indicate a wide range of application as

1. an intermediate for non-ionic detergents
2. a stabilizer for ethyl cellulose
3. a plasticizer for cellulose esters
4. an intermediate for other plasticizers
5. a starting material for production of lubricating oil additives and rubber chemicals
6. an antioxidant

<i>A typical description of Jefferson Nonyl Phenol is:</i>	Specific Gravity, 20/4°C	0.949
	Hydroxyl Number	255
	Color, Pt-Co Scale	200
	Refractive Index, 20° C	1.5140
	Flash Point (TOC), °F	300
	Distillation Range, °C (Modified ASTM)	
	IBP	290.0
	5 ml.	293.0
	50 ml.	295.0
	95 ml.	296.5
	EP	298.0

You may secure technical information and experimental samples for research and product development by writing (on your company letterhead, please) to our Market Development Division, Dept. D.

A Jefferson ethylene unit (purification section), Port Neches, Texas.



Jefferson Chemical Company, Inc.

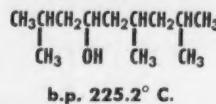
711 FIFTH AVENUE, NEW YORK 22, N. Y.



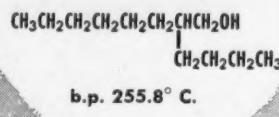
ESSENTIAL CHEMICALS FROM HYDROCARBON SOURCES

ETHYLENE OXIDE
DIETHYLENE GLYCOL
ETHYLENE DICHLORIDE
ETHYLENE GLYCOL

**TRIMETHYL
NONYL ALCOHOL**



2-BUTYL OCTANOL



For samples and additional information write to

**CARBIDE AND CARBON
CHEMICALS COMPANY**

A Division of
Union Carbide and Carbon Corporation



30 E. 42nd St., New York 17, N.Y. Offices in Principal Cities
In Canada: Carbide and Carbon Chemicals, Limited, Toronto

When inquiring check CP 5420 on handy form, pgs. 2-3

NEED A HIGHER ALCOHOL?

These 12-carbon synthetics
are available in
commercial quantities.

INTERMEDIATES FOR ...
surface-active agents
lubricant additives
rubber chemicals
flotation agents

MATERIALS

Announce availability of glyceric acid ...

dibasic acid has been used in making pyruvic acid, glyceryl phosphate, many other compounds

Uses: Has been used to prepare pyruvic acid, glyceryl phosphate and many other compounds requiring the use of a dibasic acid. Forms complexes in presence of calcium, magnesium, strontium, barium, zinc and iron.

Description: Glyceric acid (2, 3-dihydroxypropanoic acid) is prepared by careful oxidation of glycerol. Molecular weight is 106.08. The acid is a pale yellow, syrupy liquid decomposing before its boiling point is reached. It is infinitely soluble in water and alcohol and insoluble in ether. Upon heating with water, glyceric acid probably goes through an enol form during racemization.

Source: Product of Jasonols Chemical Corporation, Dept. CP, 1085 Myrtle Ave., Brooklyn 6, N.Y. . . or for more information check CP 5422 on handy form, pages 2 and 3.



SOLKA-FLOC

**Unchallenged
for Uniformity!**

You can depend on SOLKA-FLOC for unexcelled uniformity—because of Brown Company's own control of raw materials for conversion to flock, its large, steady volume of manufacture, and its many years of production experience in purified cellulose of every form.

Each SOLKA-FLOC item is manufactured to a controlled bulk level, the apparent densities varying from 9 to 34 pounds per cu. ft. It ranks high as a filter aid, as an inert carrier for odors or for purification by adsorption.

**Put SOLKA-FLOC to work for you.
Write for samples and quotations.
Address Dept. CP-7.**

**A PRODUCT OF
BROWN Company**



Berlin, NEW HAMPSHIRE

GENERAL SALES OFFICES:
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SOLKA & CELLATE PULPS • SOLKA-FLOC •
NIBROC PAPERS • NIBROC TOWELS • NIBROC
KOWTOWLS • BERMICO SEWER PIPE, CON-
DUIT & CORES • ONCO INSOLES • CHEMICALS

When inquiring check CP 5423
on handy form, pgs. 2-3

stabilizer B30
for STABILIZATION of
IRON PIGMENTS in
POLYVINYL CHLORIDE

- heat and light
- not toxic
- Attractively priced.

Send for samples.



GENERAL MAGNESITE & MAGNESIA CO.

400 Gravers Rd.

Plymouth Meeting, Pa.

When inquiring check CP 5421 on handy form, pgs. 2-3

MATERIALS

than it is for conventional greases with equivalent soap content. Increased bleeding is more evident, however, with more highly refined oils and in softer products.

Corrosive effect on brass and copper is negligible, and that which does occur is due primarily to the characteristics of the base oils or to any additives used.

Wear is equivalent to conventional greases. Manufacturing process eliminates, or greatly reduces, the abrasive constituents.

Resistance to the washing action of water and water absorption is excellent, and rust prevention on metal surfaces is good. Superior resistance to water washing is demonstrated as against some Na, Li, and Ba base greases. Although Bentone greases do absorb water, the effects on consistency (up to 125% absorption) are very slight. Greases properly inhibited have protected metal surfaces from rusting for 750 hours, under conditions of 100% humidity and 120°F.

Adhesion of Bentone greases to metal surfaces is excellent. Lack of fiber structure is thought to explain why these greases have better retention characteristics than conventional types.

Oxidation resistance of inhibited greases is excellent. Uninhibited Bentone greases are similar in this respect with uninhibited soap base greases. Properly inhibited, long induction period results.

Low temperature properties of the Bentone greases are good — equivalent to, or possibly superior than, conventional greases having same oil viscosity and consistency.

(Bentones are products of the National Lead Company, Dept. CP, 111 Broadway, New York 6, N. Y. . . or for more information check CP 5424 on handy form, pages 2 and 3.)

Adhesive strength, durability Identical for modified, straight resorcinol . . .

modified is room-temperature setting and contains 40% less of scarce, costly resorcinol

Uses: Room-temperature setting, modified resorcinol adhesive for a wide variety of wood and fiber bonding applications. Available at present only to users who can qualify under Government regulations.

Features: Uses 40% less of scarce, expensive resorcinol. This is reported to reduce the cost of this adhesive some 30% compared with the straight resorcinol type, and in addition, should be a boon in lieu of the present day short supply of resorcinol.

Results of stringent tests under JAN-A-397 specification are entirely comparable with straight resorcinol adhesives. Satisfactorily meets most Army, Navy, and Air Corps demands.

A new technique for reacting phenol, resorcinol, and formaldehyde has yielded a strong and durable modified resorcinol adhesive heretofore unknown to modified types.

Description: Penacolite G-1260 is the name being applied to this room-temperature setting, modified resorcinol adhesive.

Source: Development of Chemical Division of Koppers Company, Inc., Dept. CP, Pittsburgh 19, Pa. . . or for more information check CP 5425 on handy form, pages 2 and 3.

inactivate metallic contaminants by sequestering with Pfizer Gluconic Acid

Unwanted traces of iron, aluminum, copper and other metals picked up from pipe lines and processing equipment can be rendered inactive by the use of small amounts of gluconic acid. This non-toxic, non-volatile, non-corrosive acid acts as an effective sequestering agent...makes it all but impossible to detect the metal impurities by common analytical procedures.

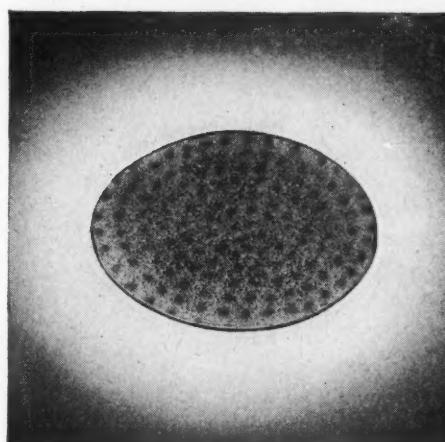
Gluconic acid prevents the precipitation of metallic cations at pH values ranging from 4.5 to relatively high caustic solutions. In the case of calcium and magnesium it has been proven particularly effective as a sequestering agent in relatively strong—3%—caustic concentrations.

One of the mildest acids available, gluconic acid is used as a sequestering agent in many processes including textile printing, industrial water treatment and tanning, and in detergent formulations. It is marketed as an amber, 50% aqueous solution possessing a slight acetous odor, and has a specific gravity of 1.24 at 25°C.

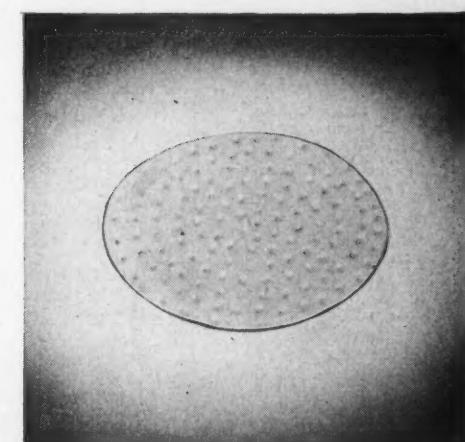
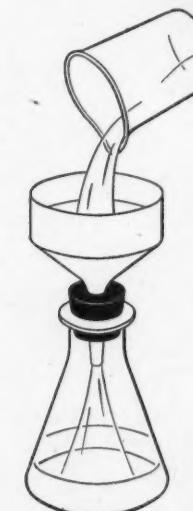
Write our Technical Service Department today for complete information, samples and prices.



PFIZER



Without Gluconic Acid



With Gluconic Acid

A small amount of gluconic acid was added to one of two beakers containing an iron solution. Both solutions were made alkaline by the addition of caustic soda. In the case of the solution without the gluconic acid, a precipitate of ferric hydroxide was formed. The solution with the gluconic acid remained clear even though adjusted to the same alkalinity.

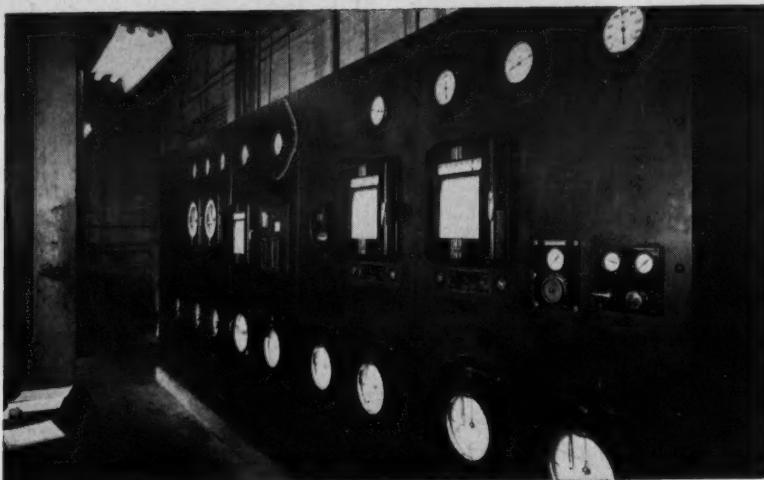
GLUCONIC ACID

AMMONIUM GLUCONATE • CALCIUM GLUCONATE • COPPER GLUCONATE • FERROUS GLUCONATE • MAGNESIUM GLUCONATE
MANGANESE GLUCONATE • POTASSIUM GLUCONATE • SODIUM GLUCONATE

CHAS. PFIZER & CO., INC., 630 FLUSHING AVE., BROOKLYN 6, N. Y.; 425 NORTH MICHIGAN AVE., CHICAGO 11, ILL.; 605 THIRD ST., SAN FRANCISCO 7, CALIF.

When inquiring check CP 5426 on handy form, pgs. 2-3

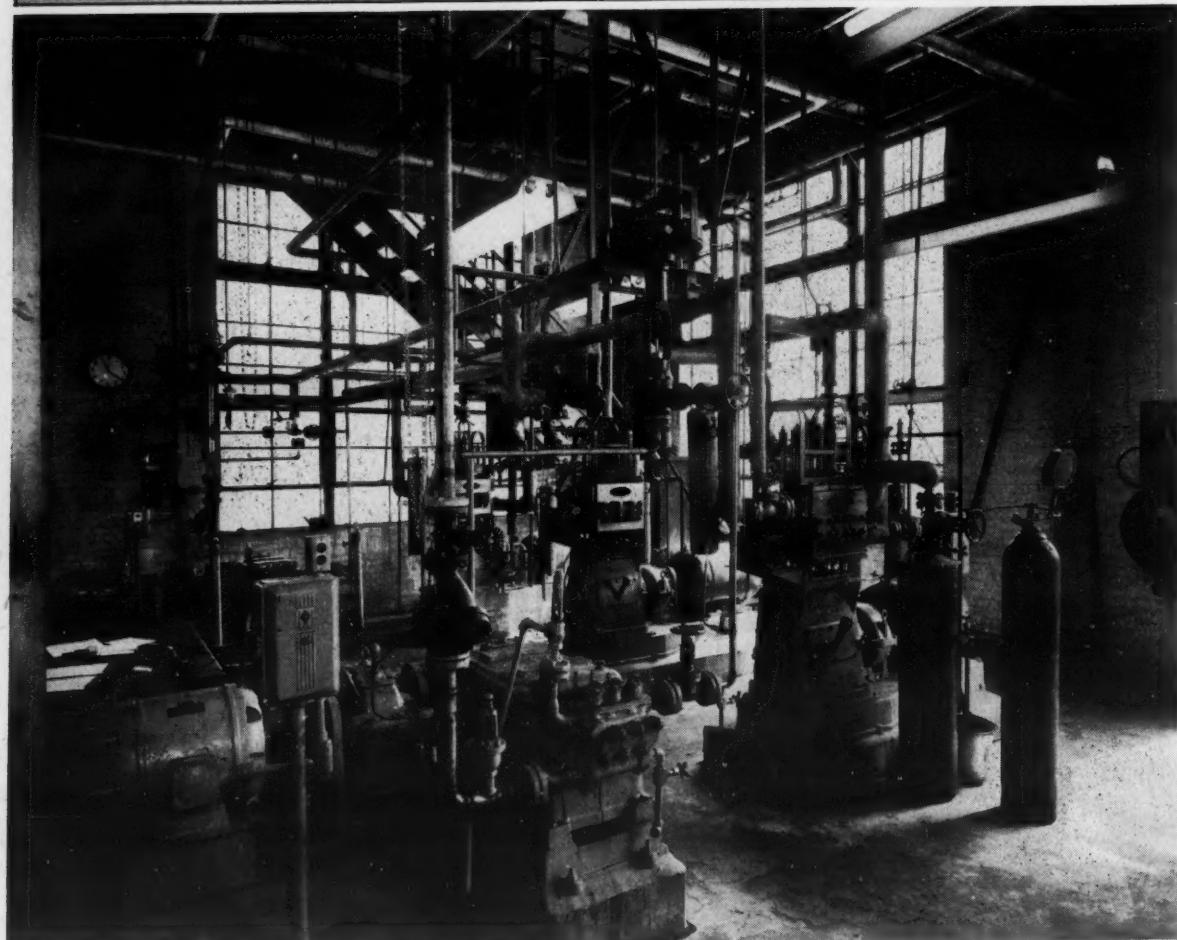
Ideas



Panel for automatic control of high pressure fat splitting at Emery Industries. Two sections in foreground control original tower; sections in background control the variables in new tower

Emery Industries have been splitting both high and low grade fats in continuously operating tower

Fat Splitting Efficiencies Average 98% During Year's Run of High Pressure Process



These high pressure pumps feed liquid fat to splitting process

HERE are now nine Colgate-Emery continuous fat splitting installations in the United States, all of which have been built since the process stepped out of the developmental stage less than five years ago. Continuous splitting has a number of advantages over the time-honored Twitchell process, but it should be emphasized that the Twitchell method may still be preferred where volume is less than 1500 lb per hr or in processing byproduct and reclaim grease.

The advantages of the continuous process over the Twitchell are: 1) reduced labor costs, 2) no sulfuric acid or Twitchell reagent needed, 3) two to three percent higher split (as oleic acid), 4) fatty acid product is considerably lighter in color with the same grade of fat and is free from unsaponifiables introduced by the Twitchell reagent, 5) sweetwater is more concentrated, usually running 13 to 18% glycerine, 6) treatment of charging stock is much less critical — an acid boil is not required with high grade fats. Of course, all of the inherent advantages of a continuous and countercurrent process are realized. Such a process is ideally suited to carrying out a reaction which is reversible and involves contact between two immiscible phases. The fact that the final degree of split is carried out in contact with fresh water just entering the system permits a higher percentage of split than could otherwise be obtained.

The Colgate-Emery process has very high heat economy, splitting more than five pounds of fat for every pound of high pressure steam. While the Twitchell process does not use any high pressure steam, it does use a large amount of low pressure steam — somewhere around an average of 1550 pounds for every 1000 pounds of fat fed. The continuous process does use a little low-pressure steam — on the order of 70 pounds per 1000 pounds feed — for melting and heating fat, warming water, and keeping traced pumping lines warm.

Power requirements of the continuous process are higher

than the Twitchell, 4.3 vs 2.6 kwh. Estimates are that repair charges on a pressure splitter will not be more than on the Twitchell, and possibly will be less.

The process

Fat and water react countercurrently in a column at about 500°F and 725 psi. Heat exchange between fatty acid and water takes place in the top portion of column, and between fat and sweetwater in bottom part. Fat enters bottom of column through a sparge ring which breaks it into small droplets. It rises through the sweetwater accumulating section where its temperature is increased by direct contact with the sweetwater. After rising through the fat-water interface, the fat is further heated by direct sparged 800-psi steam to about 500°F. Hydrolysis takes place as the fat passes upward through the tower.

Process water that hydrolyzes the fat is charged to the top of tower through a sparge ring. It is heated by direct contact with the fatty acid in an internal tray type heat exchanger and is then re-dispersed by a distributor plate. Additional heat required to bring the water to 500°F is supplied by direct steam. The water, in the form of fine droplets, falls through the column of fatty acid and fat, and the sweetwater is accumulated at tower bottom prior to discharge by automatic interface controller.

Fatty acid is discharged from top of tower through a back-pressure control valve which maintains column at working pressure. Column is completely filled with liquids, and vaporization of water is prevented by maintaining pressure in excess of vapor pressure of water at the operating temperature. Fatty acid passes to a flash tank where the temperature is dropped by evaporating the water which it carries. It then goes to a settling tank which also serves as a surge tank for recycling product in starting. Product finally goes to the fatty acid storage tanks.

Sweetwater goes to a flash tank and then to settling tank where small amounts of fat and dirt are removed by skimming. It is then ready, after a light lime treatment, to be sent to the glycerine concentrator. There is no severe scaling of the tubes with calcium sulfate as is the case with Twitchell-split sweetwater. For the same reason the finished glycerine has a very low ash content.

Emery Industries in Cincinnati have made many commercial runs on various grades of fats during the past few years. The figures that follow represent what they consider to be average for all types of feed stocks tried, ranging from low to high grade animal and vegetable stocks.

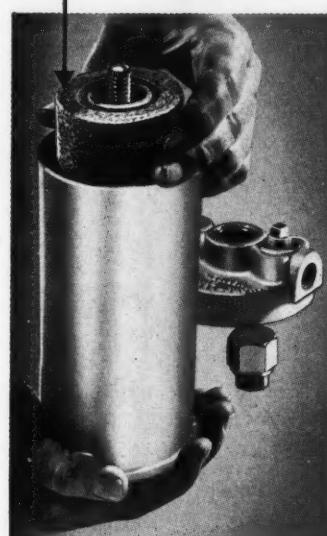
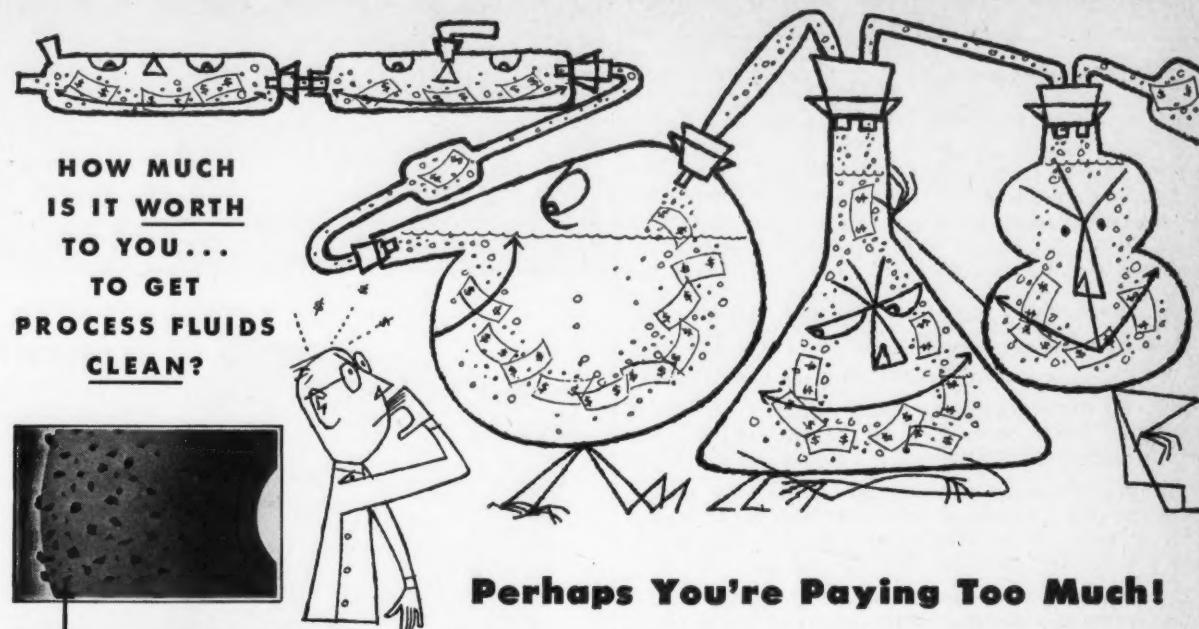
Fat throughput, lb/hr	4500
Free fatty acid in feed, as oleic	28%
Process water, lb/hr	1800
800-psi steam, lb/hr	693
Free fatty acid in product, as oleic	98.1%
Glycerine in sweetwater	16.7%

Using these figures for a material balance, we have:

IN (lb/hr)

Free fatty acid in feed, as oleic acid	1260
Neutral fat in feed, as triolein	3240
Process water	1800
800-psi steam	693
	6993

(Continued on next page)



*10, 25, 50 micron densities available
MICRO-KLEAN cartridges fit other makes; special lengths available for built-in installations.

WHAT'S YOUR CLEANING PROBLEM? SEE IF **MICRO-KLEAN** WON'T SOLVE IT FOR A FRACTION OF THE COST

- Absorption oils
- Glacial acetic acid
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- Cellulose acetate
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- Chlorinated solvents
- Industrial alcohols
- Pickling brines
- Coal tar solvents
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- Enamels
- Natural gas
- Varnishes
- Ethylene glycol
- Nitrogen
- Water and water solutions
- Ethyl and methyl cellulose
- Paraffin

OTHERS

PLEASE ATTACH COUPON TO YOUR BUSINESS LETTERHEAD

Complete Line
Fluid Conditioning

Removes More Sizes of Solids
from More Types of Fluids

MICRONIC (Micro-Klean) • DISC-TYPE (Auto-Klean) • WIRE-WOUND (Flo-Klean)

CUNO ENGINEERING CORPORATION
162 South Vine Street, Meriden, Conn.

Please send me a free copy of your **MICRO-KLEAN** bulletin. I am especially interested in the services checked.

Name..... Title.....

Company.....

Address.....

City..... State.....

When inquiring check CP 5427 on handy form, pgs. 2-3

(Continued from preceding page)

	OUT (lb/hr)
Free fatty acid in feed	1260
Free fatty acid from triolein	3100*
Glycerine produced	337
Water in sweetwater	2296**
	6993

*A splitting efficiency of 100% was used in calculations. Reaction: 1 mol triolein reacts with 3 mols water to produce 3 mols oleic acid and 1 mol glycerine.

**197 lb water entering column reacts to form glycerine.

The very slight discrepancy in the weights in and out is probably due to the assumption that the fat fed is entirely olein. Actually, the feed is a mixture of glycerides.

Splitting efficiencies have averaged about 98% during the past year. A tower about 60 feet high has been used for the runs. At present, the company is beginning runs in a tower 18 feet taller than the old one.

Plant experience has shown that almost any type of fat that is free of suspended matter, including still residues, vegetable oil foots, etc., can be handled in the equipment. The fatty acids can be used as produced for many types of products because of their light color and high degree of split. If high grade fats are used to feed the splitter, it may be possible to produce satisfactory soap without distilling the fatty acids. Where distillation is advisable, it is not necessary to neutralize or wash the fatty acids before distilling. While the fatty acids are in most cases darker than the original oil, they can in general be bleached to a color equal to or lighter than that of the original.

It is possible to switch from one type of feed stock to another with little or no intermixing. This is done by stopping the fat feed but continuing the water feed. As soon as all fatty acid has been discharged, the new feed stock is started into the tower. About eight hours of time are lost. All of the fat from both feed stocks is satisfactorily split during the switch-over.

One of the important practical problems in designing a commercial fat splitting plant is selection of suitable materials of construction to resist the corrosive conditions. Type 316 stainless steel and Inconel best fulfill the requirements.

(Information received from Emery Industries, Inc., Dept. CP, Cincinnati 2, Ohio.)

New method measures adhesion of most commercial type electro-deposits . . .

NBS-developed method overcomes most drawbacks of other ways for checking plating adhesion

None of the methods for measurement of adhesion of electro-deposited coatings in commercial production has been generally applicable. Some, for example, require specially prepared specimens and careful machining. Others involve application of heat, which may alter the adhesion of the coating. A further disadvantage of some methods is that they do not express the results of measurement in simple units having any easily visualized significance.

A technique recently developed by the National Bureau of Standards is said to overcome most of these difficulties.



Main Floor

of granulating plant gives glimpse of overall operations. Note fire-proof construction, clean, compact installation.

Consult with Sprout-Waldron on your processing problems.

MODERN CORK REDUCTION PLANT

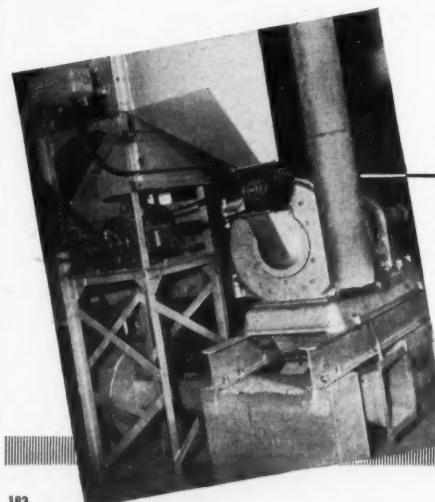
installs Sprout-Waldron Equipment ... throughout!

Illustrations show how Sprout-Waldron machines and engineering know-how tackled a diversified size reduction assignment.

The Hoosier Crown Corp., Crawfordsville, Indiana, makes cork seals for bottle caps.

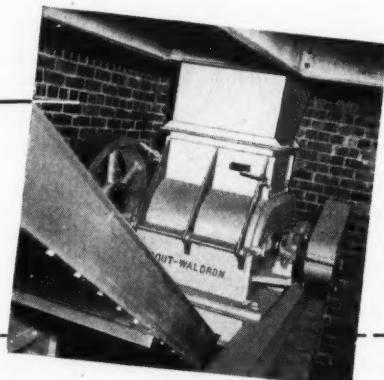
When it was decided to expand and modernize the Hoosier cork granulating plant, Sprout-Waldron was called on the job. Through close cooperation with S-W sales engineers, improved manufacturing techniques were developed. Equipment designed and built by S-W was installed to meet specialized processing requirements of Hoosier Crown Corp.

Today, installation photographs graphically illustrate another Sprout-Waldron "success story"—the story of successful operations achieved through the right combination of men, machines, and experience!



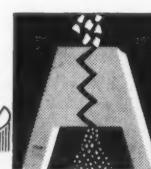
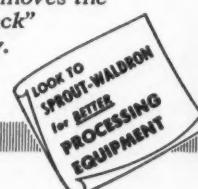
1st reduction

Preliminary crusher in basement makes first breakdown of cork blocker waste. Strips 10-12" long and 2" thick are reduced to 2" ring size. This unit has a higher production rate, and consumes only one-third the horsepower of previous equipment.



2nd reduction

The function of the 24" single runner attrition mill is to free the cork bark without cutting or shredding the cork wood. Equipped with specially designed plates, this mill provides a rubbing action which removes the friable "hardback" most efficiently.



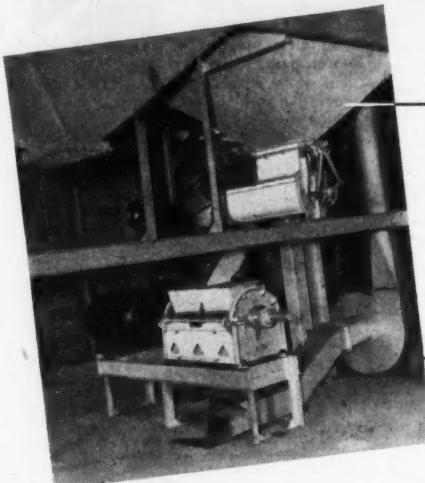


pointers

to

BETTER PROCESSING

EQUIPMENT INFORMATION FOR PROCESSING PLANTS

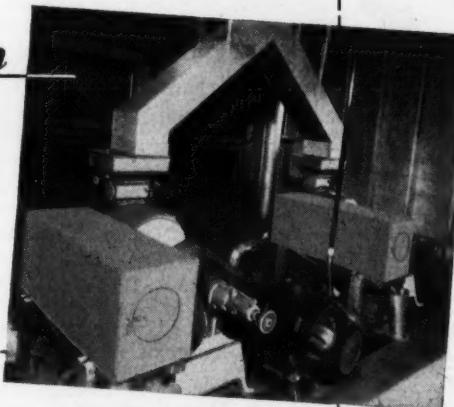


3rd reduction

After preliminary cleaning through bolting reel, cork is uniformly granulated to specified screen analysis by rotary knife cutter equipped with 25 HP motor. This refined cork product is now air-conveyed to two 16" buhr stone mills.

4th reduction

The two buhr stone mills illustrated serve as a buffing medium to put the finishing touches on the clean cork granules. The small shaker to the left of each mill sifts out and reclaims any cork flour produced by this scouring action.



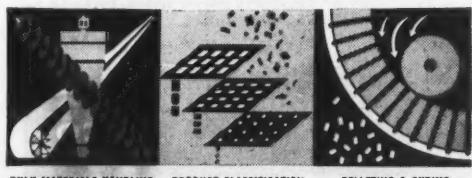
the clean up!

From the buhr stones the buffed cork enters double disc aspirator for final "air-washing". Heavy, woody granules are removed and the clean light granules are picked up and conveyed by air to storage bins for further processing.



For further information about Sprout-Waldron Processing Equipment, and Size Reduction Systems in particular, write to Sprout, Waldron & Co., Inc., 10 Waldron St., Muncy, Pa.

Sprout-Waldron
Manufacturing Engineers
SINCE 1866
MUNCY • PENNSYLVANIA



BULK MATERIALS HANDLING

PRODUCT CLASSIFICATION

PELLETING & CUBING

When inquiring check CP 5428 on handy form, pgs. 2-3

IDEAS

This technique involves the electro-deposition of an adherent, mushroom shaped nodule on the surface of the coating to act as a grip for application of a detaching force. Force required to pull off the nodule — together with a portion of the coating — is then obtained on a spring balance in ordinary mechanical units.

The cobalt nodule, deposited from cobalt chloride solution, has a tensile strength of about 75,000 psi. Thus, the test should be satisfactory for measuring adhesion of most commercially plated coatings. So far, however, it has not been possible to measure the adhesion of bright nickel coatings because the cobalt nodule does not adhere strongly enough to the bright nickel.

In making the test, the plated surface is first covered with a lacquer of "stop-off." Then several small areas, about $1/16"$ diam, are defined by plastic washers having tapered holes. Lacquer is removed from these small areas, and the nodules are built up by plating uncovered areas in the cobalt solution.

After removal of the plastic washers and stop-off material, the nodules are gripped in a chuck attached to a spring balance, and detached by exerting force through the spring. The nodule always removes the initial coating, occasionally along with some of the base metal if adhesion is high. From the reading of the spring balance and measurement of the area of the base of the nodule, the adhesive force per unit area is computed.

One disadvantage is the time which a skilled technician must spend in making the test. Ordinarily, if nodules are deposited overnight, one skilled operator can prepare and test about 10 specimens per day.

(National Bureau of Standards, U. S. Department of Commerce, Washington 25, D. C.)

Rubber-lined 35,000 gal tanks used to store muriatic acid at reactivated magnesium plant . . .

tanks each measure 40' long and weigh 45,000 lb Expanded defense program has demanded reactivation of operations at Diamond Magnesium Company plant at Painesville, Ohio. Four steel tanks, each of 35,000 gallons capacity, are vital to processes.

After the tanks were rubber-lined by B. F. Goodrich Company at Akron, Ohio, they had to be transported to

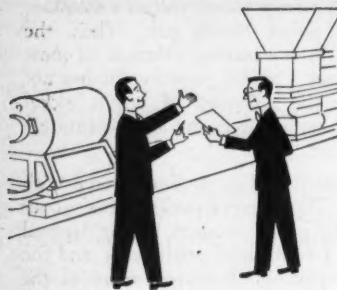


Rubber-lined tank enroute to magnesium plant

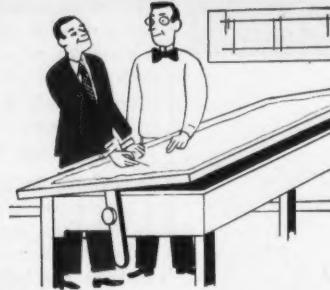
Painesville. At many points along the route, telephone and trolley wires had to be lifted to permit the necessary 16' 8" clearance. Tanks measure 40' in length, have a diameter of 12' and weigh 45,000 lb each. (B. F. Goodrich Company, Dept. CP, Akron, Ohio.)

SOME "DO'S and DON'T'S" IN BUYING DRYING EQUIPMENT...

(that will save time, money and headaches)



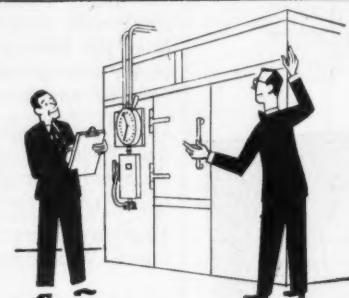
DON'T wait until the last minute to consider drying equipment—after your other process equipment has all been ordered or even installed.



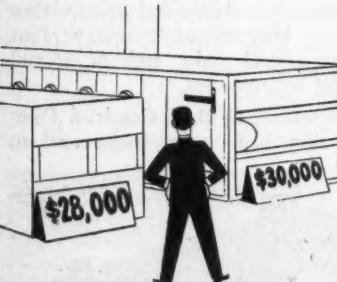
DO call in Proctor engineers while your process is in its earliest planning stage. Drying is a major link in the over-all process—and may easily affect—or be affected by other equipment.



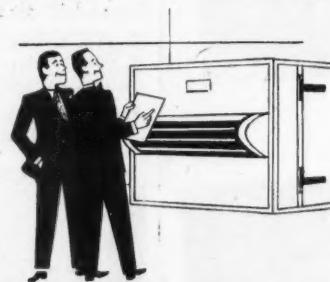
DON'T spend hours of your own men's time trying to work out your own design for a drying system. This is costly in man hours, effort and dollars.



DO call in Proctor engineers who will conduct necessary tests in their well-equipped laboratory at no cost to you and make recommendations for a system that will be designed to your specific needs.



DON'T base your final decision in the selection of a drying system entirely on the price tag or initial investment. Some customers have found this a costly experiment.



DO remember that you are buying "guaranteed performance" when you invest in a Proctor system that is designed to meet your needs and which will be meeting those needs before Proctor considers the transaction closed.



PROCTOR & SCHWARTZ INC.

663 TABOR ROAD • PHILADELPHIA 20, PA.

DO acquaint yourself more thoroughly with the Proctor approach to solving drying problems by writing today for Bulletins 343 and 361.

When inquiring check CP 5429 on handy form, pgs. 2-3

IDEAS

Interesting facts about liquid ozone . . .

safe handling, preparation, and physiological effects, and potential applications

Prior to recent advances in ozone technology at the Armour Research Foundation of Illinois Institute of Technology, Chicago, handling of quantities of liquid ozone was accompanied by frequent and unscheduled explosions. Although sizable quantities of pure liquid ozone are now being produced, and no unplanned detonation has occurred for more than 2 years, concentrated liquid ozone must still be handled with respect and caution.

When a quantity of liquid ozone is spilled on a warmer surface, it will evaporate rapidly leaving concentrated ozone which is highly explosive in the presence of certain reactive materials. In general, concentration of liquid ozone varying from 11-30 per cent must be handled with the same care necessary in the handling of 90 per cent hydrogen peroxide.

Ozone can be prepared by any of the following ten methods: 1) chemical action, 2) electrolysis, 3) an electrostatic field, 4) a jet of burning hydrogen, 5) ultra-violet rays, 6) radioactive elements, 7) the introduction of a heated spiral of platinum wire into liquid oxygen, 8) exposure of moist phosphorous to the air, 9) incandescent solids in the air, and 10) the evaporation of water. The simplest form of laboratory ozonizer bombards oxygen with high speed electrons. When ozone is prepared commercially by the silent discharge method, 5,000 to 80,000 volts are used.

Severe burns, similar but far worse than those caused by dry ice, will result from small quantities of ozone spilled on the skin. This is caused by the rapid extraction of heat. To keep the concentration of ozone gas given off by liquid ozone below the toxic level, the temperature of the liquid is usually maintained at or below minus 112 degrees Centigrade. Rubber gloves, which will ward off the damaging effects of many acids, are useless when handling liquid ozone. Both natural and synthetic rubber is rapidly disintegrated by liquid ozone. Consequently, either asbestos or heavy cloth gloves must be used when there is any danger of splashing even dilute mixtures.

Huntington has correlated and analyzed variations in atmospheric ozone concentrations with the various physiological characteristics of mankind. His analyses indicate that both the long and the short periods of high mental activity and high reproduction rates occur during the periods of highest ozone concentration. Although Huntington's work showed some amazing correlations, it is only a statistical analysis and therefore subject to debate. Statements that ozone is not present in large cities or industrial areas are erroneous. This theory has been checked and disproved in both Chicago and Murray Hill, New Jersey.

In small quantities, gaseous ozone has no harmful effect on human beings and may even be beneficial. Four parts of ozone per million parts of air seems to have no harmful physiological effect, despite the very strong aroma. There are, however, several definite physiological effects which occur in direct proportion to the strength of the ozone concentration. With concentrations of two parts per million, a decrease in metabolism of from 10-20 per cent will occur after five hours. The pulse rate will be lowered and there will be a marked decrease in blood pressure in persons having an initially high blood pressure.

With higher concentration of ozone, the first primary irritant symptoms appear. These are evidenced by coughing, a smarting sensation in the nose and throat, and, in

IMPROVE CONTROL OF FLUID FLOW AND SHUT-OFF

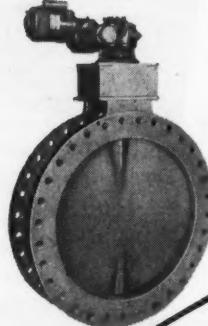
24" stainless steel butterfly valve with Cono-Control air diaphragm operator and auxiliary hand wheel control; operation at high temperature.



20" rubber-lined butterfly valve with air cylinder and counter-weight, for corrosive vapors at 215°F.



30" butterfly valve for 60 p.s.i. operating pressure; equipped with Janette electric motor operator.



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Automatic Butterfly
VALVES

For air, gases, liquids, semi-solids—corrosive or abrasive—hot or cold—at pressures to 100 p.s.i., Rockwell Butterfly Valves provide controlled flow and quick shut-off that's automatic and trouble-free.

Made in all pipe sizes to 72", any metal or rubber-lined; may also be manually controlled.

Ask to be put on list to receive monthly issue of the Valve News about Rockwell Butterfly and Slide Valves.

W. S. ROCKWELL CO.

220 Eliot St., Fairfield, Conn.

When inquiring check CP 5430 on handy form, pgs. 2-3

CHEMICAL PROCESSING

some cases, smarting and watering of the eyes. These disappear within an hour after the subject is removed from the area of high concentration. In strong enough concentrations, estimated as above ten parts per million, gaseous ozone can be fatal.

Probably the most widespread misconception regarding ozone is the common belief that it accounts for the blue color in the sky. Actually, large quantities of oxygen would probably cause the same effect. Manufacturers of ozone equipment have often claimed that ozone is useful in eliminating carbon monoxide in garages, buses, planes and automobiles. However, the reaction rate of low ozone concentrations is extremely slow. The high concentrations needed would not only be fatal to human beings but are also unobtainable from any commercial ozonizer using air.

Of the two fuels capable of sending a rocket to the moon, ozone is one. The other, fluorine, is just as powerful but much more difficult to handle. Other uses for this chemical include air and water purification, bleaching, deodorizing air, increasing the strength of yeast, and in oxidizing the oils used in the manufacture of linoleum. As a bleaching agent, ozone is superior to chlorine, hydrogen peroxide, and other liquid bleaches as it leaves no detrimental residue which ultimately decreases the strength of the bleached material.

As the liquid ozone can be decomposed directly into oxygen, it has many valuable military applications. Planes carrying liquid ozone instead of oxygen tanks will be able to spend more time at high altitudes without exhausting their oxygen supplies. Submarines, which quickly run out of oxygen when submerged below "snorkel" depth, will be able to remain many fathoms deep for days at a time. Other military uses for liquid ozone are obscured by being placed in the category of "classified" material.

Ozone has been used as a water purification agent for many years and is ideal for this purpose. Large cities, such as Paris and Philadelphia, and smaller communities including Whiting and Hobart, Indiana, have had ozone water purification plants for years. In air conditioning and ventilating systems, ozone destroys bad odors and overcomes the feeling of closeness that exists whenever a number of people are in a confined space.

(Information received from Armour Research Foundation, Illinois Institute of Technology, Dept. CP, Technology Center, Chicago, Ill.)

Lacquer-finished steel again substituting for bronze, steel . . .

should relieve current shortages of these metals where metallic finish is required

The growing shortages of both bronze and brass is compelling many fabricators of these materials to find substitute materials. The World War II practice of substituting bronze or brass colored steel is again becoming popular where these metallic finishes are required.

One-coat systems of bronze or brass colored lacquers are being applied to steel by spray or dip. After air drying for 15 minutes, or furnace drying at 300°F for 10 minutes, objects are ready for handling.

(Lacquers are produced by the United Lacquer Mfg. Co., Dept. CP, 1001 W. Elizabeth Ave., Linden, N. J. . . or for more information check CP 5431 on handy form, pages 2 and 3.)

Now CMH offers
**a proved expansion joint
for pressures up to 5500 psi**



OTHER CMH EXPANSION JOINTS

For low and medium pressure service you may take advantage of the same engineering skill that has developed FLEXONIFLEX units. CMH Controlled-Flexing Expansion Joints are available in copper or stainless steel for pressures up to 300 psi, sizes to 48" I.D. CMH Free-Flexing Expansion Joints are also available in copper or stainless steel for pressures up to 30 psi, sizes to 48" I.D. Larger sizes are available in both types for special applications.

Flexon identifies CMH products that have served industry for over 49 years.



Advancements in the design of the CMH FLEXONIFLEX Expansion Joint—the "proved-in-service" high pressure expansion joint—now make it possible to offer units for working pressures up to 5500 psi. For all power and process applications it means that the advantages of compact, easy-to-install expansion control may be used at pressures far beyond those which had previously been considered safe.

Standard FLEXONIFLEX units have bellows type stainless steel pressure carriers, single or multiple ply, lined or unlined with integral control rings and end sections. Sizes range from 5/8" through 6" I.D., although larger sizes can be furnished. Suitable for temperatures from sub-zero to 1600° F. (higher with special materials).

For specific recommendations send complete details of your application.

CHICAGO METAL HOSE Corporation

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**ONE DEPENDABLE SOURCE
for every flexible metal hose requirement**

Convoluted and Corrugated Flexible Metal Hose in a Variety of Metals • Expansion Joints for Piping Systems
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corrosion control—moulded by



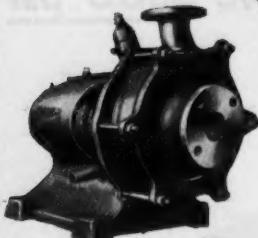
From metallurgy and design, through foundry and assembly—"control" keynotes DURCO products

Moulds for Durco castings are produced on mechanized lines like these.

Other manufacturing methods are just as modern—as the many Durco corrosion-resisting alloys are cast, machined, and assembled into a wide line of valves, pumps, pipe, fans, and other corrosives-handling equipment.

Even the most modern facilities cannot keep abreast of every demand today, and certain Durco alloys and products are difficult to obtain. But that is where Durco's long experience and great variety of alloys and equipment may stand you in good stead. A technically-trained Durco representative may be able to show you how your corrosives-handling problem can be solved with *available* means. That is his job today. Write, phone or wire, asking that the nearest Durco representative visit your office at your convenience.

THE DURIRON
COMPANY,
INC.,
DAYTON,
OHIO



A Model 40
Series R Durocopump

● A general view of moulds being made on moulding machines in a section of Duriron's mechanized foundry.



IDEAS

Course offered in scientific French

Self-teaching manual covers French language used in scientific works. Designed for those who have no previous knowledge of the tongue, 331-page book deals with a minimum of grammar. Major part explains translation of recent scientific articles.

To obtain "Science French Course," remit \$4.75 direct to Chemical Publishing Co., Inc., Dept. CP, 212 Fifth Ave., New York 10, N. Y. When inquiring specify CP 5433 on handy form, pages 2 and 3.

Nomograph finds weight or volume of material in 55-gal drum . . .

made of 18-ga aluminum punched for ring-binding

A nomograph developed by Maynard R. Euverard of Interchemical Corporation sets up relationships between pounds per gallon, net weight, and gallons so that any of these can be quickly found when the other two are known. The "gallon" scale extends from 45 to 56, "pounds per gallon" from 6.00 to 16.00, and "net-weight" from 300 to 900. Nomograph is thus intended for use with 55-gallon containers.

Chart is fabricated from 18-gage aluminum having dimensions of 18½ by 21". The depressed characters on the neutral gray surface are filled with black enamel. A 1/8" hole punched in each corner facilitates mounting. Each chart is furnished with clear plastic strip carrying an accurately machined hairline.

(Gallons Content Nomograph for 55-gallon drums is being marketed by Henry A. Gardner Laboratory, Inc., Dept. CP, 4723 Elm St., Bethesda 14, Md. . . or for more information check CP 5434 on handy form, pages 2 & 3.)

Government report covers water pollution

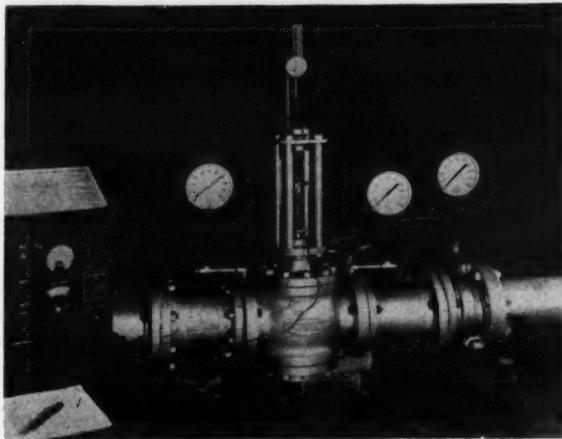
Interesting and informative report deals with general topic of water pollution. Pollution is outstripping control facilities, is reaching a critical point. To obtain Public Health Service Publication 64, remit 35c direct to Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C.

For more information on product at left, specify CP 5435 . . . see information request blank between pages 2-3.

Strain gages help in design of operators for control valves

To guide the selection and design of diaphragm motors for automatic control valves, valve stem forces were determined recently at all positions of valve plug opening with several types of valve plugs, varying valve body design, and a range of fluid pressures through the valve. Investigation was concerned entirely with the change in force throughout the stroke, which varies more than is generally expected.

Valve stem forces were measured in these tests by means of Baldwin SR-4 resistance wire strain gages. Gages were bonded on diametrically opposite sides of a strain element



consisting of a steel tube accurately machined to the required sensitivity and incorporated in the stem. Valve stem position was adjustable within a steel superstructure, as illustrated, which permitted clamping the plug in any desired position by two special lock nuts. Plug lift position was indicated by a dial type micrometer gage.

Force measuring instrument, shown at left, is a Baldwin Type L strain indicator. Strain gage measuring system was calibrated with a weigh beam before and after the test. Accuracy of the SR-4 equipment was reported to be well beyond that required for these tests.

(Information received from the Baldwin-Lima-Hamilton Corporation, Dept. CP, Philadelphia 42, Pa.)

Holding release bar open not necessary in making penetrometer test . . .

simple modification permits leaving instrument when running longer time penetrations

In using many standard asphalt penetrometers, the operator must use his right hand to hold open the needle release mechanism. When running 5-second penetrations this is not important, but when running longer period penetrations, such as standard low temperature penetrations or special research studies, much of the operator's time is wasted.

A solution to this was found at The Atlantic Refining Company's asphalt research laboratories by drilling a $\frac{1}{8}$ " hole through the supporting arm and needle release bar. A pin is inserted in this hole to hold bar in the open position, permitting the operator to leave the instrument while the test continues. (The Atlantic Refining Company, Philadelphia, Pa.)

Technical data on the revolutionary new

holo-flite*

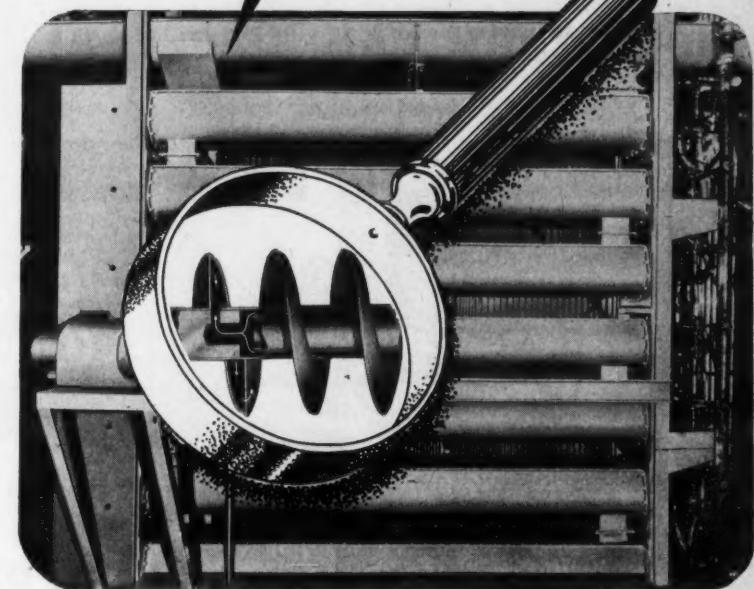
(HOLLOW-FLIGHT)
PROCESSOR

If you have processing operations where slurries, solids, pulps or pastes must be cooled or cooked, be sure to investigate the many unique advantages of the newly-developed HOLO-FLITE Processor before you install any heat-exchange equipment.

Here's the HOLO-FLITE principle . . .

Two or more screw conveyors rotate slowly in a trough. The blades and shaft of each flight of conveyors are hollow, with provision for circulating the heat-transfer agent through them. The product to be cooled or cooked is moved along the trough, being constantly rotated into, around, over and under the conveyor screws as it moves.

Thus, a continuous thermal transfer takes place between the product and the heat-transfer fluid circulating in the blades. The product is cooled or cooked in continuous-flow without the "stop-and-go" losses of batching operations . . . and cooled products can be packaged directly from the HOLO-FLITE discharge—saving space, time and additional handling.



THIS 6-TIER HOLO-FLITE cools 7 tons of cottonseed press cake per hour from 285° to 89° F. in a total floor space of only 28 sq. ft.
(Inset) Enlarged cutaway view of HOLO-FLITE screw showing heat-transfer principle.

**Here are typical
HOLO-FLITE
advantages**

The HOLO-FLITE principle is so unique it is setting completely new standards of performance in many ways. For example . . .

*Reg. T.M.

The HOLO-FLITE Saves Space

—It requires as little as 1/5th the space of other units of comparable capacity because (1) it has far greater heat-transfer area per cubic foot of space . . . and (2) the flights can be "tiered" as high as desired to give maximum capacity in very small floor areas.

The HOLO-FLITE is Versatile—Processed product can be fluid, pulp or paste—granular, crys-

talline or powdered solid. Heat-transfer fluid can be refrigerant, cooled or ambient water, steam, oil or any other desired fluid, at any normal temperature range.

The HOLO-FLITE is Dust-Free

—Its gentle action provides large heat-transfer action without dust and with negligible particle abrasion. Simplifies installations, assures higher quality product.

The HOLO-FLITE is Adaptable

—It can easily be designed to handle virtually any capacity by (a) varying the diameter of the screws (7" to 16") . . . (b) varying the length of the screws (8 ft. to 20 ft.) . . . (c) varying the number of intermeshing screws per trough (2, 4, or 6) . . . and (d) varying the number of tiers stacked on top of one another (1 to 10, or more).

The HOLO-FLITE is in daily operation on such typical products as sand, cement, cottonseed cake, soybean meal, borax, salt, sugar, baby foods and many other equally-varied products.

What is your problem? Our engineers will be glad to assist you in making the most of HOLO-FLITE advantages. Write wire, or phone the office nearest you!

Want More Facts? This 8 page booklet describing the HOLO-FLITE in greater detail will gladly be sent on request. No obligation, of course.

**WESTERN
Precipitation
CORPORATION**

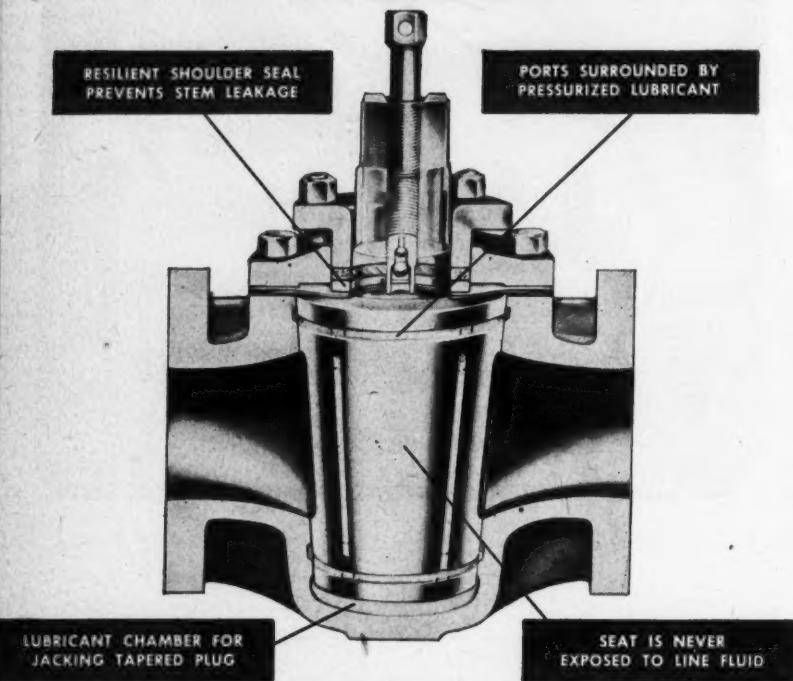
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When inquiring check CP 5436 on handy form, pgs. 2-3

Have you a corrosion problem in your lines?

NORDSTROM CAN HELP YOU!



SPECIAL ALLOYS FOR CHEMICAL SERVICE

Corrosion can quickly destroy an exposed valve seat. But in the Nordstrom valve the seat is never exposed. It is further protected with pressurized lubricant. To still further avoid corrosion, Nordstrom valves can be supplied in alloys (subject to availability of materials) to fit the service — including stainless steel with Merchrome coated plug, bronze, Mercoloy, Ni-Resist, Nickel, as well as semi-steel and steel. If you will advise us as to the service, size, temperature and pressure, we will make recommendation of the most suitable type to solve your corrosion problems.



Nordstrom
CORROSION-RESISTANT
VALVES REQUEST BULLETIN
ROCKWELL MANUFACTURING COMPANY
400 N. Lexington Avenue Pittsburgh 8, Pa.
Offices in all principal cities
When inquiring check CP 5437 on handy form, pgs. 2-3

IDEAS

Experimental station studies forecast plant capacities, equipment performance . . .

unnecessary use of heavier materials, overbuilding of plants avoided; costs lowered, processes improved

Recently dedicated Du Pont Experimental Station laboratories are serving company engineers who are seeking ways to build chemical plants that are less costly and more efficient than those in use.

Studies of corrosion problems in chemical manufacturing, design of distillation equipment and behavior of construction materials in high pressure synthesis plants are among numerous projects.

Laboratory representatives point out that it was not unusual to find many parts of a new plant actually capable of handling two or even three times design rating — which was fine when it could be used but expensive when it couldn't. Also, stressed in these comments is the improved position today; still, however, it is a rare piece of equipment that can be sized with assurance as close as plus or minus 10%. In the past, lack of knowledge of the effect of high pressures upon construction materials caused some installations to be made of heavier and costlier material than necessary. One of the pieces of equipment in the laboratories is capable of developing up to 200,000 psi, extremely high for a machine of its type, although low by comparison with pressures obtained in research in the physics of high pressures. Furthermore, the machine, a hydraulic intensifier, is a semi-commercial engineering research tool using a volume of liquid many times that employed in physics studies.

In the high pressure laboratory in the Engineering Research building, the hydraulic intensifier is used in the study of behavior of materials under steady pressure. Usually the test pieces are cylinders of carefully selected steel similar to tubing which might be used in a chemical plant. Performance is recorded by means of strain gauges. The pressure studies have not been under way very long but enough has been learned to save the cost of the research in a projected expansion at one of the company's high pressure plants.

Other cost saving and process improving studies are being made in the distillation laboratory. Distillation equipment, like high pressure equipment, has been overbuilt.

(Summarized from report on Experimental Station laboratories, E. I. du Pont de Nemours and Company (Inc.), Dept. CP, Wilmington, Del.)

Plug welds jacketed vessels to eliminate 90% of costly interior grinding . . .

method provides speed and strength with reduction of surface distortion, manufacturer finds

A semi-automatic plug welding method is saving one manufacturer of stainless steel jacketed vessels much costly interior grinding.

Jacket is made by plug welding a plain liner to a dimpled liner. First liner is made of 12 gauge polished stainless steel; the second of 14 gauge stainless steel. Resulting jacket will withstand loading of approximately 275 to 300 pounds hydrostatic pressure without objectionable set taking place.

Dimpled liner is formed in a press brake setup in which a complete row of dimples the width of the sheet is pressed at one time. Dimples are staggered in rows about 4" apart.

With DESCO You Stock Only

DALE HALF as many
Plug Valve Lubricants

Only 4 DESCO Standard Service Lubricants are needed to service all the plug valves around the average plant. For those unusual cases there are 3 DESCO Special Lubricants.

With DESCO Lubricants you not only reduce your investment in lubricants but materially reduce the hazard of using the incorrect lubricant.

DESCO Lubricants are packed in bulk and in convenient, individual sticks in 6 sizes. 12 to 24 sticks to a carton, 6 cartons in a case. Write for catalog 14-0.



DELTA-DESCO Plug Valve Lubrication SYSTEM

The DELTA-DESCO System combines the Delta High Pressure Gun, Adapter Fittings (or Automatic Lubricator), Specialized Lubricants, and Engineering Service. With it an operator can lubricate 10 to 15 valves in the time usually required to lubricate one — and do the job better!



DELTA Automatic Plug Valve LUBRICATOR

A simple device, automatically lubricates valve each time it is opened and closed. Write for Lubricator Catalog 15-0.

The Only Complete
Plug Valve
Lubrication
Company

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DELTA
ENGINEERING SALES CO.

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SHREVEPORT, LOUISIANA, U.S.A.
Sales Offices in All Principal Cities

When inquiring check CP 5437
on handy form, pgs. 2-3

CHEMICAL PROCESSING

This liner is then clamped securely to the inner liner by compression bands so that all of the dimples make good contact with the inner liner.

Welding is accomplished with a hand-operated stud welding gun and special $\frac{3}{8} \times 1$ " grooved $\frac{1}{4}$ " stainless steel stud with $7/16$ " protective ceramic ferrules that concentrate the heat of the arc and restrict the flow of molten metal.

As shown in the photo, plug welding is done in a down-hand position. Operator inserts the stud and ferrule into the chuck of the gun, and positions stud in the dimple.



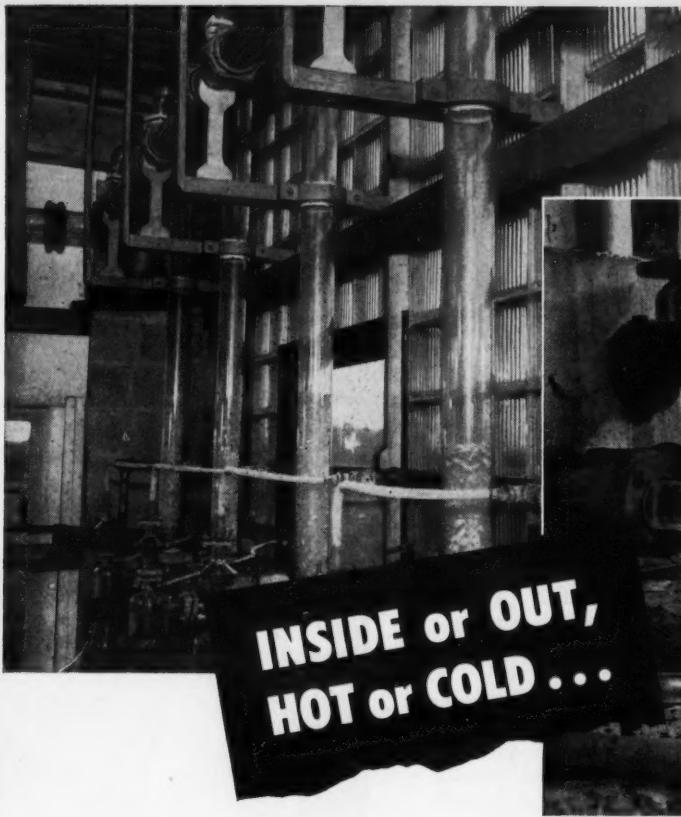
Two liners are being stud welded together at one of the dimples. Cut-away view of tank section is shown at upper left-hand corner

Weld is completed in a fraction of a second after the gun's trigger is pulled by current flowing through the stud and across the adjoining surfaces of the 2 shells. Heat produced melts the lower portion of the stud and some of the dimpled area of the second shell.

This welding method is considerably faster than hand welding, is stronger than spot welding, and does not roughen inner surfaces as much as methods previously used, so that 90% of the grinding formerly required is eliminated.

Source: Tanks made by this process are produced by The Pfaudler Co., Dept. CP, 1000 West Ave., Rochester 3, N. Y. . . or for more information check CP 5439 on handy form, pages 2 and 3.

Stud welding apparatus is produced by Nelson Stud Welding Division of Morton Gregory Corporation, Dept. CP, Lorain, O. . . or for more information check CP 5440 on handy form, pages 2 and 3.



PYREX brand Glass Pipe "Can Take It"

If you believe that you must "baby" PYREX brand "DOUBLE-TOUGH" glass pipe, here are some facts that may surprise you. In use now for about 25 years, PYREX pipe has proved its dependability both inside and outside the plant (in all kinds of weather). The photographs above show typical installations . . . and this pipe has been in use for a long time.

Naturally, you can't throw glass pipe around or hit it with a hammer. But with reasonable care, it has always proved a profitable investment. PYREX brand glass pipe has a very low expansion coefficient. That's why it will take temperature shock . . . why it stands up in cold weather even with hot

liquids flowing through it! And there is nothing better from the standpoint of corrosion resistance—it handles anything except hydrofluoric acid.

Physically strong to start with, PYREX brand glass pipe is now made with tempered ends—we call it "DOUBLE-TOUGH." The fittings, elbows, tees, reducers, crosses, etc., are also tempered. This treatment makes PYREX pipe better than ever before. With the current shortage of many corrosion-resistant materials, take a new look at PYREX Piping. It's available without priority and at reasonable cost. Corning's Piping Distributors can help you with layout and installation. Better get the full story. Use the coupon.



CORNING GLASS WORKS
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Corning means research in Glass

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Send me your new Pyrex brand Glass Pipe Catalog.

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COMPANY _____

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CITY _____ ZONE _____ STATE _____

When inquiring check CP 5441 on handy form, pgs. 2-3

If you pipe it...there's a
Fairbanks® valve
to control it



Here are two typical examples of the outstanding design, sound engineering and rugged construction that are built into every Fairbanks Valve. Years of experience in meeting all kinds of valve requirements for industry, have given Fairbanks Engineers a storehouse of knowledge in controlling the flow of water, steam, gas, oil, chemicals, etc. Consult them without obligation.

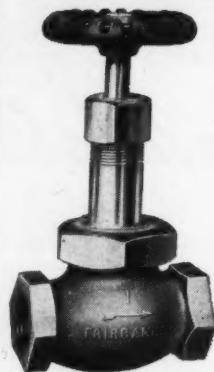


Fig. U-01
Renewable Composition Disc
Globe Valve — 150 lb. S.W.P.

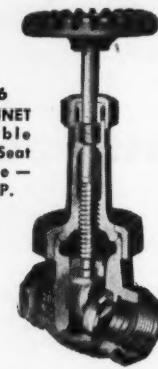


Fig. 0236
UNION BONNET
— Renewable
Nickel Alloy Seat
Gate Valve —
200 lb. S.W.P.

THE
Fairbanks COMPANY
General Offices:
393 LAFAYETTE STREET, NEW YORK 3, N.Y.

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When inquiring check CP 5442 on handy form, pgs. 2-3

IDEAS

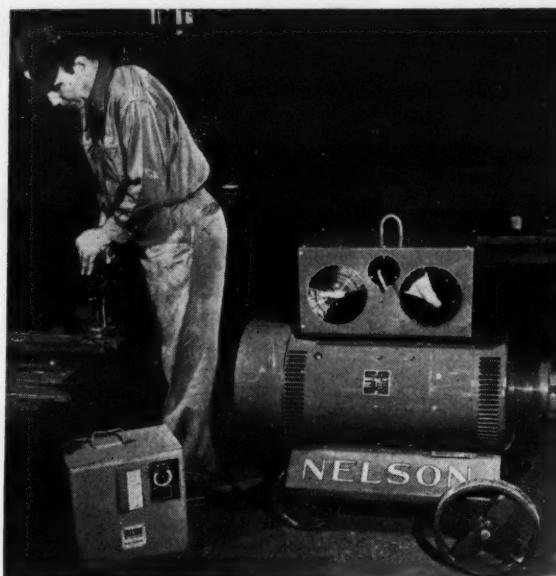
Shorten bolt replacement time with stud welding . . .

battery-powered unit used for plant construction and maintenance . . . is adaptable for plug welding

Instead of removing the broken portion of the bolt, retapping the hole and inserting a new bolt, one manufacturer has cut bolt replacement time from 20 minutes to five minutes by end welding a stud in place after minor surface preparation. The preparation consists of either cutting the bolt flush to the surface if it is broken off above the surface, or filling the hole with weld metal when the break is below the weld surface.

Two power units are available for use with stud welding equipment. One is a motor-operated generator set capable of welding studs up to $\frac{3}{8}$ " in diameter and the other is a battery-powered unit for studs up to $\frac{1}{2}$ ".

The former is equivalent to two conventional 400-amp generators in parallel, but costs about 2/3 as much.



Shop use of motor-generator stud welding set. Battery unit is also available

Size is comparable to a 200-amp welding generator; weight is about 800 pounds. Either 220 or 440-volt, 60 cycle AC is used.

For plant maintenance operations, or where welding generators or necessary power is not available, the battery unit, requiring only a 110-volt AC outlet for charging, is particularly useful.

It consists of twelve 6-volt, 150 amp wet storage batteries mounted on a frame covered with an easily-raised hood. An automatic battery charging device is mounted on top of the hood. Unit weighs approximately 1100 pounds.

Primary use of stud welding is to end weld a stud to a piece of metal, as when hanging electrical and plumbing fixtures or repairing steel roofing. It can also be adapted to plug welding two sheets of metal together as described in the preceding story.

Source: Stud welding equipment and power units are products of the Nelson Stud Welding Division of Morton Gregory Corporation, Dept. CP, Lorain, O. . . . or for more information check CP 5443 on handy form, pages 2 and 3.

Patterson
Fermentation
Equipment

Patterson has designed and built many types of mixers and fermentation units for the production of antibiotics and enzymes, as well as for the biological conversion of chemicals.

We can offer complete fermentation units or agitator installations for your pilot plant or full plant scale operations. Write us your requirements!

Richard L. Cawley
President

The Patterson Foundry and Machine Company

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Machine Company, (Canada) Limited
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MONTREAL

When inquiring check CP 5444
on handy form, pgs. 2-3

CHEMICAL PROCESSING

**Processing plants offered plan
to aid rubber conservation . . .**

maintenance of belting, hose and packing is described and illustrated

A conservation maintenance plan to conserve rubber has been developed by Quaker Rubber Corp. which gives directions on how to select, install, and maintain conveyor belting, flat transmission belting, V-belts, hose and packing.

The complete plan includes a handbook, wall charts, and monthly bulletins. This data contains hundreds of illustrations. This conservation program material is available to any industrial plant.

(Quaker Rubber Corp., Division of H. K. Porter, Inc., Dept. CP, Philadelphia 24, Pa. . . or for more information check CP 5445 on handy form, pages 2 and 3.)

**Sodium carbonate in water
causes delignification of
cooling towers . . .**

acidification to control pH at 6.5 is preventive, but metal parts must be protected against attack

Chemical deterioration (delignification) of cooling tower wood involves removal of the lignin binder from the cellulose fibers, resulting in a fibrous cellular structure of low strength. Studies by cooling tower manufacturers indicate that sodium carbonate present in the circulating water is a causative factor. It has been suggested that a circulating water with pH 6.5 will have the least tendency for delignification attack although pH values below 8.3 can be permitted. However, pH alone is not always a good indication as to how much delignification the water will cause. It is usually advisable to calculate actual sodium carbonate content.

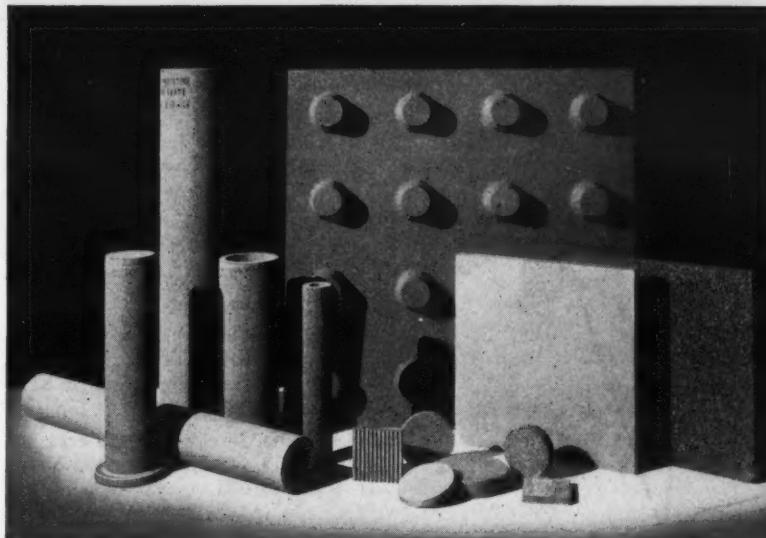
Sodium carbonate is usually present due to lime or lime-soda softening of the makeup water, and is not generally present in untreated supplies. Sodium carbonate may also develop where sodium zeolite softening is practiced.

Distribution of water over the tower is another important factor affecting delignification. In cases where poor distribution has occurred, delignification has been noted because the carbonate concentration was quite high in the immediate areas of total evaporation. When these areas are wetted, there is a tendency for the saturated water to be absorbed by the wood. On later drying of these areas, recrystallization of the salts takes place, resulting in rupture of the cell membranes. Alternate wetting and drying will cause further ruptures, continually exposing fresh surfaces to attack. Delignification is considerably greater where salts have accumulated due to evaporation than in areas which are continually washed by water. Salt accumulations should be removed from these areas by periodic washing with a hose.

Chlorine, used in control of slime and algae in cooling towers, will attack lignin, tannin and other constituents of the wood. A chlorine residual of 0.5 to 1.0 ppm should be sufficient to control the slime and algae. Excessive concentrations should be avoided.

Acid treatment of the circulating water to control pH around 6.5 is the accepted means of minimizing delignification. In this range, it is important to use corrosion inhibitors to protect the metal surfaces.

(Summarized from "The Betz Indicator," Vol. 19, No. 9, a publication of W. H. & L. D. Betz, Dept. CP, Gillingham & Worth Sts., Philadelphia 24, Pa.)



Gas-diffusing or filter mediums of Norton ALUNDUM* fused alumina are manufactured for a wide variety of commercial and laboratory operations.

Why should your porous mediums be uniformly porous?

Porosity may be defined as the percentage ratio of pore space by volume to the bulk volume of the piece. There are three types of pores: open, closed, and closed at one end. Obviously, the only passage through the medium is via the open pores. Therefore, if the flow of air or gas through the medium is to be uniform, it is essential that the medium's pores be uniformly distributed.

Norton, long-experienced in the development of fused alumina products, meets this need with porous mediums of ALUNDUM material. Thanks to "controlled structure" processing, all Norton ALUNDUM porous mediums have substantially the same pore volume — while the size and number of open pores are varied to provide the desired permeability.

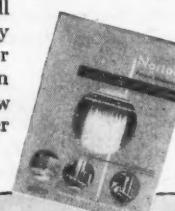
Other Advantages

ALUNDUM porous mediums are unaffected by acid, neutral or slightly

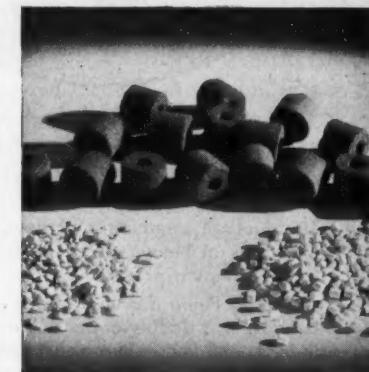
alkaline conditions encountered in commercial and laboratory processes . . . they are exceedingly refractory, withstanding temperatures up to 1000° C . . . their unusual strength assures maximum resistance to abrasion, high operating pressures and breakage or chipping in handling.

Send For Bulletin

Bulletin No. 140 contains complete data as to physical structure, etc., of Norton ALUNDUM porous mediums, and other refractory products. Let it help you decide whether they will benefit your processing. Your Norton representative will be glad to supply you with a copy, or write direct. Norton Company, 565 New Bond St., Worcester 6, Mass.



**Fused Alumina
Catalyst
Supports
In Wide Choice
Of Surface
Areas**



Norton Company is now making catalyst supports in commercial quantities, in five different mixtures of refractory grains, ranging from 77% to 89% fused alumina. Water absorption values of these catalyst supports vary from 12% to 22% by weight, while surface areas by the nitrogen absorption method range from 0.025 to 0.821 square meters per gram. They are made in spheres, pellets and rings of varying sizes.

Get All The Facts

Your Norton representative will be glad to give you full information about these new catalyst supports. Or, a letter direct to us will get prompt attention.

NORTON COMPANY

565 NEW BOND STREET
WORCESTER 6, MASS.

*Trade-Mark Reg. U. S. Pat. Off. and Foreign Countries

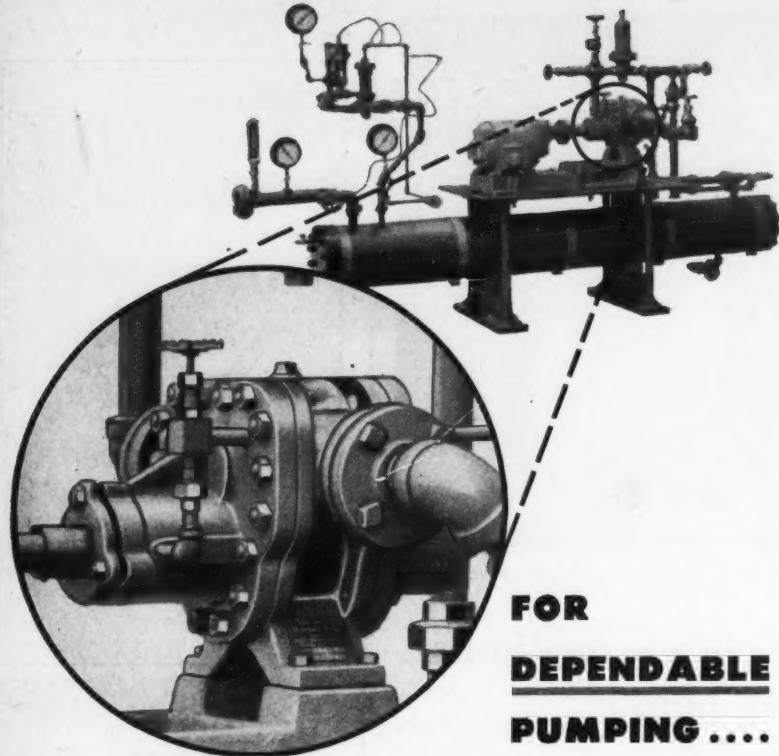
Making better products to make other products better

POROUS MEDIUMS

Canadian Representative

A. P. GREEN FIRE BRICK CO., Ltd. TORONTO, ONTARIO

When inquiring check CP 5446 on handy form, pgs. 2-3



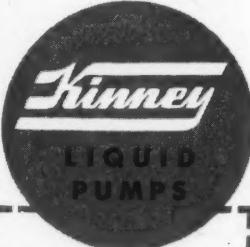
**FOR
DEPENDABLE
PUMPING . . .**

...COME TO KINNEY

This fuel oil pumping and heating unit manufactured by The Engineer Company of New York depends on a Kinney SD Rotating Plunger Pump for its pumping power.

The SD Pump is a wise choice for this and countless other pumping jobs because it is doubly-dependable: (1) It can always be relied on to deliver liquids with meter-like volumetric efficiency, due to its unique rotating plunger mechanism. (2) It is thoroughly dependable from the service point-of-view, as well. The Kinney SD Pump handles liquids in a wear-free, trouble-free manner, giving years of service with minimum maintenance and attention.

When your pumping problem involves viscous liquids, remember Kinney SD — the Pump that has no springs, valves, blades, vanes, or gaskets and only one stuffing box. SD Pumps are available in capacities from 2 GPM to 3000 GPM for a wide range of operating pressures. Furnished plain or steam-jacketed to suit the job requirements. Send coupon for complete details. KINNEY MANUFACTURING CO., Boston 30, Mass. Representatives in New York, Chicago, Cleveland, Houston, New Orleans, Philadelphia, Los Angeles, San Francisco, Seattle, and foreign countries.



KINNEY MANUFACTURING COMPANY
3573 WASHINGTON ST., BOSTON 30, MASS.

Please send me Bulletin L48 . . . the complete catalog of Kinney Liquid Pumps. My liquid pumping problem involves:

<input type="checkbox"/> Acid Sludge	<input type="checkbox"/> Lube Oils	<input type="checkbox"/> Molasses	<input type="checkbox"/> Tar
<input type="checkbox"/> Asphalt	<input type="checkbox"/> Edible Oils	<input type="checkbox"/> Paint, Enamel	<input type="checkbox"/> White Lead
<input type="checkbox"/> Chocolate	<input type="checkbox"/> Fuel Oils, Diesel Oil	<input type="checkbox"/> Road Oil	<input type="checkbox"/> Others (see letter attached)
<input type="checkbox"/> Crude Oil	<input type="checkbox"/> Grease	<input type="checkbox"/> Soap, Glycerine	

Name..... Company.....

Address.....

When inquiring check CP 5447 on handy form, pgs. 2-3

IDEAS

Packaging Institute wants members' specifications for fading of colors

The Fadeometer Test Subcommittee of the Printed Packaging Materials Committee requests members of the Packaging Institute to supply the following information:

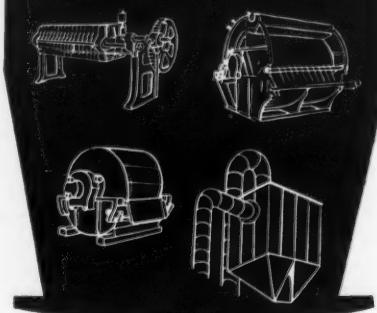
- 1). Do you have a specification which you furnish to your suppliers with reference to the fading of colors on labels, boxes, cans, shipping cases, etc.?

- 2) If so, please give your specifications.

Because this is not a routine A.S. request, and because the committee will someday report the whole subject, it is not planned to prepare a routine A.S. report — unless the collaborators request it.

(Advisory Service Request No. 306, Packaging Institute, Dept. CP, 342 Madison Ave., New York 17, N. Y.)

ON FOUR DIFFERENT FILTERS IN ONE PLANT



FEON Saves

... up to \$500 per year per filter! That's because FEON synthetic fabrics last from 10 to 12 times longer than the cotton cloths they've replaced in this pigment plant—and give better results, too. Here are the facts:

1. STRING DISCHARGE ROTARY FILTER: FEON 208 Nylon lasts a year under severe chemical conditions, compared to six weeks for cotton. Saves \$500 a year.
2. SCRAPER DISCHARGE ROTARY FILTER: Light-weight, efficient FEON 208 Nylon under less severe chemical conditions replaces heavy cotton. Saves \$150 a year.
3. FILTER PRESS: FEON 164 DYNEL gives 900% longer life than cotton fabrics, saves \$2664 a year.
4. DUST COLLECTOR: FEON fabrics now under test are far outlasting other materials, promise extensive savings.

Savings like these may be possible in your plant! Try FEON now—filter cloths that last from 3 to thirty times longer—one source of supply for all needs—24-hour service. Send us the facts and figures on your job today. We'll be glad to quote prices and make recommendations.

GET
STARTED
NOW!



FILTRATION FABRICS DIVISION
FILTRATION ENGINEERS, Inc.
155 Orton Street • Newark 5, N. J.

When inquiring check CP 5448
on handy form, pgs. 2-3

CHEMICAL PROCESSING

IDEAS

Over 150 tons of this wire has been used for automotive wheel bolts and is being specified by the bolt manufacturer.

Still another use for wax in metal fabricating is that by a screw manufacturer. It was determined the torque of self tapping metal screws could be reduced by 50% if screws were given a coating of the special wax blend. A major aircraft manufacturer is successfully using wax as a lubricant in shoe bending of a hard alloy tube. Wax not only reduces the bending pressure from 4 to 2½ tons, but also materially reduces the loss from crimping and buckling.

(Summarized from survey by S. C. Johnson & Son, Inc., Dept. CP, Racine, Wis.)

Coated wrapping releases vapor to prevent rusting . . .

Army Ordnance is experimenting with new procedure that may improve "cocooning"

The Army Ordnance Research and Development Division has been experimenting with a paper wrapping that has a coating of chemical crystals on one side which release a corrosion inhibiting vapor. If tests prove successful the wrapping may do away with coating metals with grease for preventing rust formation, and would improve the old protective "cocoon" method of protecting planes, guns and vessels from severe weather conditions. Researchers have already developed a shroud treated with the chemical that can be quickly placed over aircraft engines, etc.

The "volatile corrosion inhibitor," as the chemical is called, is a powdery substance that releases a thin vapor which, inside the wrapper, forms an invisible protective shield around the metal. The vapor is reported to penetrate into inaccessible places.

(Chemical is made by Shell Oil Company, Dept. CP, 50 W. 50th St., New York 20, N. Y.)

Succeed in attaining a Teflon-to-metal seal . . .

result is hermetic seal capable of holding vacuum for sustained periods

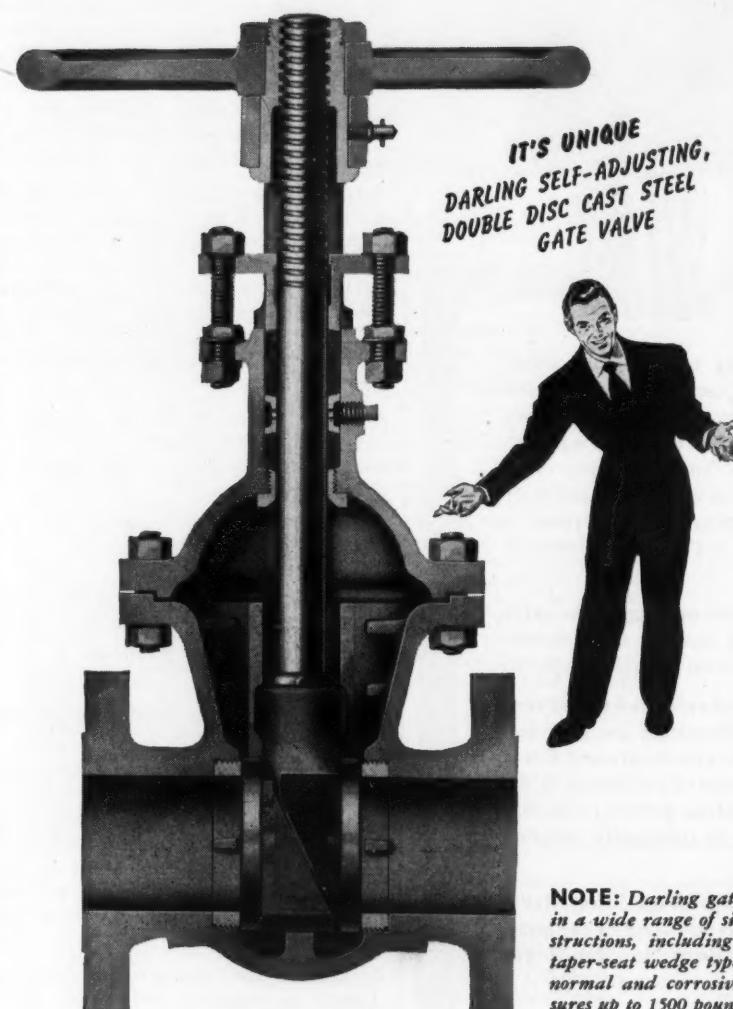
Success has been recently gained in sealing fluorocarbon resins (Teflon) to any one of several metals. Result is a hermetic seal described as capable of holding a vacuum for sustained periods.

Fluorocarbon-metal hermetic seal is recommended where severe service conditions are encountered. Because of the physical characteristics of Teflon, seals can be made to withstand vibration, shock, high and low ambient temperatures, and thermal shock. The structure is microcrystalline in nature and the seal gradually reverts from a pure fluorocarbon resin to a pure metal.

"Chemelec" seals, as they are called, can be designed for a broad range of electrical conditions ranging from insulator, to semi-conductor, to low resistance conductor and radio frequency shield, or any combination of these in the same unit. Various types of terminals, printed circuits or metal faced Teflon sheets, rods, or cylinders for special problems can be designed.

(Development of the Teflon Products Division of the United States Gasket Company, Dept. CP, PO Box 93, Camden 1, N. J. . . or for more information check CP 5449 on handy form, pages 2 and 3.)

WHY seat misalignment doesn't cause this Darling Valve to leak!



NOTE: Darling gate valves are made in a wide range of sizes, types and constructions, including solid and slotted taper-seat wedge types, for all kinds of normal and corrosive services in pressures up to 1500 pounds.

FOR PLUS VALUES, JOB-PROVED AGAIN AND AGAIN

NO gate valve body ever made is entirely immune to distortion caused by line stresses and temperature changes. Yet even slight distortion can throw the seats out of alignment—probably the most common cause of leaky valves and costly replacement.

That's one reason why Darling gate valves, with their unique wedging principle combined with fully revolving double discs and parallel seats, have the jump on other valves. They easily, automatically adjust for valve body distortion, cinching tight, leak-proof closure without destructive strong-arm tactics. Most important, you avoid costly down-time and repeated maintenance headaches.

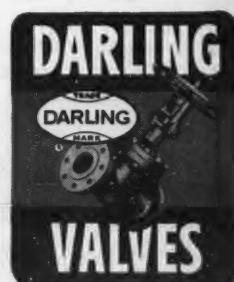
But that's not all! Actually, this Darling principle offers several other equally important time-and-money-saving advantages. In plant after plant they add up to trouble-free performance and longer service life with a very minimum of attention.

GET ALL THE FACTS

Send for descriptive cast steel valve Bulletin No. 5003.

DARLING VALVE & Manufacturing Co.

WILLIAMSPORT 4, PA.



When inquiring check CP 5450 on handy form, pgs. 2-3

meet the
newest
member
of the
FariSeal
family

BalanSeal*

IT SAVED \$75,000 IN
PIPING WITH A \$5,000
VALVE INVESTMENT**



Pioneered by Farris Engineering Corp., embodying advanced engineering techniques, and absolutely unique—although it is now being imitated—the patented BalanSeal is ideally suited for use wherever a collecting system is required for a series of safety-relief valves. It permits a higher downstream pressure—and consequently, smaller piping. Yes! The cost of a BalanSeal valve installation is a mere fraction of the savings effected in down-stream piping. (**In one case, a cost reduction of \$75,000 resulted from a \$5,000 investment in BalanSeal Valves.)

In BalanSeal, the sole force opposing the opening of the valve is the spring. Downstream back pressure, static or surge, cannot act on the disc and has absolutely no effect on the relieving point.

BalanSeal is the ultimate in safety-relief valve design and construction. The bellows, which also distinguishes the FariSeal design, is so proportioned as to eliminate any unbalanced forces on the valve disc—which is perfectly balanced on its seat at the set pressure. Like all other FariSeal Valves, perfect protection is provided for guide, stem and spring by completely isolating these parts from the lading fluid.

Get the facts on the revolutionary BalanSeal Safety Relief Valve. Find out how you can cut installation costs to the bone, step up operating profits. Write for Bulletin No. 52B—it will pay off in ASSURED safety and installation economy.

*Patented and
Patents Pending

Farris

SAFETY and RELIEF VALVES

FARRIS ENGINEERING CORP.

406 Commercial Avenue Palisades Park, N. J.

④ 7676

When inquiring check CP 5451 on handy form, pgs. 2-3

IDEAS

NBS thermostat holds temp of electric furnace constant to fraction of degree . . .

thyatron circuit is applicable in temperature range of 1000 to 1550 degrees C

An improved precision thermostat developed by the National Bureau of Standards provides smooth, continuous control of an electric furnace within a very small range at temperatures between 1000 and 1550°C. Reports are that the temperature can be held constant within $\pm 0.1^\circ\text{C}$ for several hours, and within $\pm 1.0^\circ\text{C}$ for several days. It is possible that the device can be used in regulating temperatures of lower temperature furnaces, baths and heaters. Unit is of the type in which furnace winding itself serves as sensitive element, forming part of a bridge circuit for control of a thyatron tube. The thyatron circuit then acts as a continuously variable valve, allowing just enough current to reach the furnace to compensate for a given temperature fluctuation.

Since alternating current is used, the resistance coils in the bridge, except those of the furnace, are non-inductively wound. This makes it possible to balance both the reactive and resistive components of the bridge.

Output of bridge is amplified and applied to control grid of thyatron. When resistance of furnace winding changes slightly with temperature, the resulting unbalance of bridge produces a difference in phase between the constant control voltage and the anode voltage of thyatron. This phase difference determines firing period of the thyatron, and the thyatron action is reflected to the bridge circuit through a transformer, thus controlling the amount of energy supplied to furnace.

An advantage in the use of the phase-controlled thyatron is gradual or proportional control as contrasted to on-off control. Overshooting, which appears with on-off control, is greatly reduced.

(National Bureau of Standards, U. S. Department of Commerce, Washington 25, D. C.)

Catalytic reforming process yields high octane gasoline with less loss . . .

can be used for production of benzene, toluene and xylene from petroleum

A catalytic reforming process developed by The Atlantic Refining Company to convert low octane naphthas into finished high octane gasoline is said to economically accomplish the following when processing straight run naphtha: 1) dehydrogenation of naphthenes to aromatics, 2) isomerization of cyclopentanes to cyclohexanes, and 3) isomerization of normal paraffins to isoparaffins.

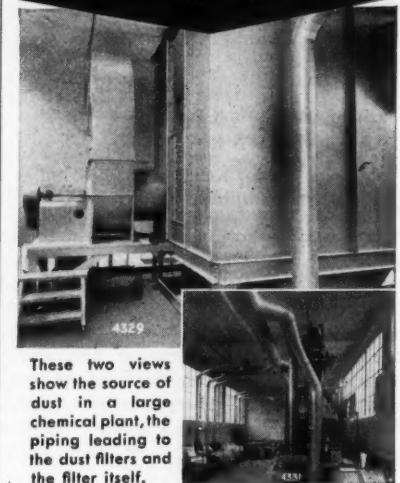
Because of the catalyst's properties and operating conditions, no methane and ethane are formed under any operating severity. In addition to the high yields obtained, this process has the advantage that the reformat is essentially free of sulfur and olefins so that no further treating of the finished gasoline is required.

Charge stocks to the process may consist of any fractions of crude naphtha up through normal gasoline end point, natural gasolines, and mildly thermally cracked naphthas. Catalyst employed does not require special rerunning facilities preceding the reaction section.

With operating conditions normally required for motor

SLY

PIONEERS AND LEADERS IN DUST CONTROL



These two views show the source of dust in a large chemical plant, the piping leading to the dust filters and the filter itself.

*NO SALESMEN

We employ no salesmen, but—*mature engineers* are at your service without obligation.

. . . at New York • Chicago • St. Louis • Philadelphia • Minneapolis • Birmingham • Cincinnati • Lansing • Los Angeles • Rochester • Toronto

The proper application of Dust Control Equipment to your needs is definitely a science.

Your Sly Engineer, backed by an experienced technical staff at the home office, brings that science to your door.

The know-how of dust control is not found in print—it is gained only by experience. With over 50 years' experience in this field, involving thousands of installations in practically all industries, we have an exceptional background which can be of great value to anyone with a dust problem.

Yet-Sly costs no more (sometimes less). May we send you Bulletin 98 and discuss your problem with you?



THE W. W. SLY MANUFACTURING CO.

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When inquiring check CP 5452 on handy form, pgs. 2-3

gasoline, the process is a continuous, non-regenerative one in which the charge naphtha and a recycle hydrogen stream are heated together by exchange and furnace to the operating temperature. Mixture passes in series through two or more reactors with reheat between reactors to compensate for the endothermic heat of reaction. Final reactor effluent is cooled by exchange with the feed and water and then flows to a high pressure gas separator. Recycle hydrogen, which is consistently about 95% purity, is compressed and returned to the reactors, and the net production is withdrawn to fuel or other uses. Separator liquid flows to a conventional fractionating tower for stabilization. Process is so controlled that there is little change in molecular weight and therefore little loss in volume through the process.

Under conditions used, the platinum-containing catalyst is capable of continuous operation at severities such that a net conversion of 65 to 75% of all five and six carbon ring naphthenes to aromatics is accomplished. However, processing conditions resulting in 85 to 95% conversion of naphthenes to aromatics, or feed stocks that contain appreciable quantities of material in the kerosene boiling range, will necessitate semi-continuous operation with regeneration required at weekly to bi-monthly intervals to remove small quantities of coke formed in the operation.

Data on the production of benzene by once-through operation on a C₆ straight-run fraction is presented in the following table. Almost 85% conversion of naphthenes is achieved. Note that extensive isomerization of C₅ rings is necessary to make this result possible.

Benzene Production

	Charge Stock	Product
Paraffins %	36.2	32.7
Cyclopentanes %	26.5	6.8
Cyclohexane %	29.6	0.8
Benzene %	7.4	45.8
Toluene %	0.3	4.9
C ₅ %	—	2.9
C ₄ %	—	6.1
Boiling Range (TBP), °F	160-185	—
Vol % Fresh Feed (C ₆ and heavier)	100	85.5

Data on the production of toluene by the once-through operation on a C₇ fraction from crude naphtha is shown in the following table. A conversion of about 95% of the cycloparaffins was obtained, indicating again the extent of the isomerization that is achieved.

Toluene Production

	Volume	
	Charge Stock	Product
Paraffins %	35.0	19.0
Cyclopentanes %	26.2	2.1
Cyclohexanes %	28.3	0.8
Benzene %	—	2.4
Toluene %	10.2	46.6
Other Aromatics %	0.3	7.1
C ₅ %	—	2.2
C ₄ %	—	19.8
Vol % Fresh Feed (C ₇ and heavier)	100.0	89.1

(Catalyst is manufactured by The Davison Chemical Corporation, Dept. CP, Baltimore, Md. Process evaluation and licensing are handled by The Atlantic Refining Company, Dept. CP, 2700 Passyunk Ave., Philadelphia, Pa. . . or for more information check CP 5453 on handy form, pages 2 and 3.)



2 BLENDERS DO THE WORK OF 4 . . . BETTER AND FASTER



Auburn Button Works, Auburn, N. Y. manufactures component plastic parts for the automotive, refrigeration and business machine industries. Uniform blending of plastics and pigments is an important part of the operation.

To check p-k claims for absolute uniformity in blending, an 8-qt. transparent p-k Laboratory Blender was installed.

Results were so satisfactory that a 2-cu. ft. and a 5-cu. ft. p-k blender were purchased to replace equipment previously used. Soon a second 5-cu. ft. p-k blender will be added. Auburn has found that the two blenders now in service require only 5 to 15 minutes blending time for accurate dispersion, whereas the old blenders required two hours or more for far less satisfactory results. Loading and unloading time has been reduced, and the smooth polished interior surface has reduced cleaning time to a matter of minutes. Either air hose or a dry cloth may be used, regardless of dyes or the materials blended.

p-k Twin Shell Blenders mix dry materials faster and more thoroughly than any other blender. Capacities range from 1 to 250 cubic feet; speeds from 6 to 29 rpm.

p-k will run experimental mixes of your material without cost or obligation. It will be your introduction to a new, accepted and proved method of dry blending.



p-k blenders: 8-qt. laboratory blender used for sample blends which exactly predict the production run.



Write for catalogs 401 and 402, for complete information.

p-k

70 years of heat transfer experience assures you of superior design and construction

p-k Mixers
p-k Coolers
p-k Kettles
p-k Agitators
p-k Nitrators
p-k Reboilers
p-k Autoclaves
p-k Condensers
p-k Evaporators

p-k Sulfonators
p-k Brine Heaters
p-k Brine Coolers
p-k Freon Coolers
p-k Soap Cutters
p-k Ribbon Blenders
p-k Fuel Oil Heaters
p-k Vapor Condensers

p-k Lube Oil Coolers
p-k Lube Oil Heaters
p-k Reaction Vessels
p-k Instantaneous Heaters
p-k Quenching Oil Coolers
p-k Storage Heaters
p-k Refrigerant Condensers
p-k Twin Shell Blenders*

* Patented



Patterson-Kelley Co.
Inc.

21 Lackawanna Ave.

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Railway Exchange Building
Chicago 4

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Philadelphia 3

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speed. Thus, a power saving of only 45% at half speed operation is realized.

In the small plant, water cooling can be efficiently handled by "closed" systems utilizing atmospheric or shell and tube heat exchangers in conjunction with raw water circulation over spray ponds or spray towers if space is available and driftage is not objectionable. In the larger units, the waste heat may be dissipated efficiently by an induced draft cooling tower.

In locations of high water cost or unavailability of dependable water supply, the recently developed air-cooled heat exchangers fulfill the requirement. Utilizing the mechanical equipment developed for cooling towers, the air-cooled devices are designed to force or induce a flow of ambient air over the extended tube surface developed by "fins" wrapped around or drawn out of a heavy wall tube through which the circulating water is pumped. Efficient designs of finned tubing often deliver 2.5 times the capacity of plain tube surface per square foot of effective external area.

Without the advantage of latent heat phenomena utilized in cooling tower function, the air-cooled exchangers, dependent upon dry bulb temperatures of the ambient air, compare favorably in total annual charges to the cooling tower installations on internal combustion engine-driven generators. With 100°F dry bulb air passing through the finned tubing, 140°F water temperature can be achieved efficiently. Obviously, the economy of the air-cooled designs is lost when the temperature requirements fall close to or below the ambient dry bulb temperature.

(Summarized from paper presented by Mr. Raymond C. Kelly, J. F. Pritchard & Company, before the annual Midwest Power Conference, sponsored by the Illinois Institute of Technology, April 4, 1951.)

Portland cement setting time automatically determined by new instrument . . .

saves operator's time in making frequent checks; results agree with conventional tests

An automatic machine, known as the Spissograph, has been developed to eliminate much of the time otherwise required for an operator to make frequent checks to determine the setting time of Portland cement pastes and mortars. The setting time of four samples can be determined simultaneously, the pastes being placed in cylindrical molds and the needles lowered mechanically by cam. The needles correspond in size and weight to the Vicat needle. Depth and penetration of each needle is chart recorded. A motor turns the main shaft equipped with cams to 1) rotate the paste so that each penetration is into a new position of the paste, 2) lower the needle on each sample at 10-minute intervals, and 3) move the recording drum a definite distance so each value may be properly recorded.

Results agree well with the Vicat test for initial set, although they give somewhat lower final sets. Agreement with the Gillmore test is reasonably good for initial set and again somewhat lower for final set.

The Spissograph is readily adaptable to the new mortar setting test recently proposed to the ASTM. Details are carried in article entitled "Mechanically Determining the Time of Set of Portland Cement by Means of the Spissograph," appearing in December, 1950, issue of ASTM Bulletin, pages 79-81.

(Information gained from American Instrument Co., Inc., Dept. CP, Silver Spring, Md.)

JULY, 1951



8-hour job now takes 4 hours

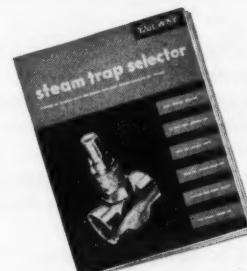
At a western magnesium reduction plant something besides magnesium has just been reduced. The steam at the end of the 1½ mile long steam line wasn't so hot—and neither was the production record of the plant at that location.

Then 26 old-type steam traps were replaced with Yarway Impulse Traps. Now there is only a 15° temperature drop from the boilers to the end of the line. Most important, the plant 1½ miles from the boilers is now able to do work in 4 hours that previously took 8 hours.

That's trap efficiency! It's evidence of the fact that Yarways are designed to send the most premium B.T.U.'s at top temperatures into your process or product. They get equipment hotter, sooner . . . and keep it hot.

Other Yarway features—small size, one moving part, easy installation, low maintenance, low cost, stainless steel construction. Nearly 750,000 Yarways have already been installed. For your Yarways, see a nearby industrial distributor . . . 216 stock and sell Yarways.

YARNALL-WARING COMPANY, 125 Mermaid Ave., Philadelphia 18, Pa.



FREE TRAP SELECTOR

It's important to have the right trap in the right place. New 20-page selector tells quickly and easily which is the right Yarway trap for any application. Write for your free copy.

YARWAY

the steam trap

designed with more production in mind

When inquiring check CP 5457 on handy form, pgs. 2-3

I've re-ordered B&W ALLMUL FIREBRICK

That's what scores of users are saying about B&W Allmul... the new, remarkable, electric-fused mullite firebrick. In plant after plant, Allmul has been *re-ordered* for such severe service applications as ferrous and non-ferrous melting furnaces, slag melting furnaces, butt-weld furnaces, glass tanks, checker chambers, ceramic kilns and many others. *That's proof of performance.*

There are two good reasons for the welcome Allmul has received. The first is its *price*. Mass-produced by a special, highly efficient process, top-quality Allmul comes to you at a price far lower than you would expect. For concrete evidence, look at the performance-price ratio charted at right.

The second reason is *staying power*. The panel below gives facts and figures... shows why no other firebrick in Allmul's price range can match its performance. In fact, no mullite brick at any price can better the performance of Allmul.

If you are not yet saving money with B&W Allmul, may we suggest you investigate this important new firebrick immediately. The sooner you start using Allmul, the greater your ultimate savings will be. SEND FOR NEW BULLETIN R-29.

ALLMUL is another important refractories development by B&W engineers who have continuously established new standards in industrial furnace refractories for the past 30 years.



B&W REFRactories PRODUCTS — B&W 80 Firebrick • B&W Junior Firebrick • B&W 80 Glass Tank Blocks • B&W Insulating Firebrick
B&W Refractory Castables, Plastics and Mortars • OTHER B&W PRODUCTS—Stationary & Marine Boilers and Component Equipment...
Chemical Recovery Units... Seamless & Welded Tubes... Pulverizers... Fuel Burning Equipment... Pressure Vessels... Alloy Castings

When inquiring check CP 5458 on handy form, pgs. 2-3

ALLMUL PERFORMANCE

PERFORMANCE VS. PRICE

ALLMUL PRICE

CHECK THE PROPERTIES OF ALLMUL!

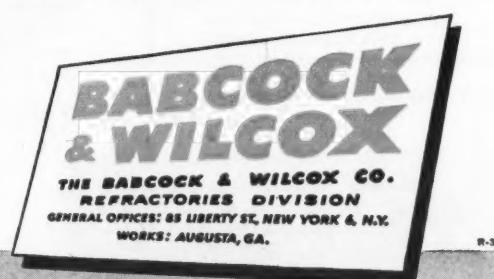
Here's how B&W Allmul stood up under standard tests.

SPALLING—12 cycles of heating to 2550°F and chilling in cold air and water spray. Result—no loss.

HOT LOAD DEFORMATION—1½ hours at 3050°F under load of 3600 pounds per square foot. Result—less than 2% deformation.

PERMANENT VOLUME CHANGE UNDER REHEATING—After 5 hours at 3200°F. Result—less than ½% change.

FACT—no other firebrick in Allmul's price range can match its performance. **Fact**—no mullite brick at any price can better the performance of B&W Allmul.



IDEAS

Stock feed supplement screened from still's residual mash through plastic mesh . . .

screening available for range of industrial applications in a number of sizes

The Feed Division, Joseph E. Seagram & Sons, Inc., Louisville, Ky., utilizes "Lumite" woven Saran to screen residual mash from the whiskey still. Screened by-product is subsequently dried and sold as a livestock feed supplement.

This screening is available for industrial applications in the following sizes:

Construction

32 x 32
20 x 20
18 x 14
8 x 8

Filament Diameter

.010
.012
.015
.020



Screening residual mash from whiskey still

(Orville Simpson Rotex screen installation utilizes Saran "Lumite" woven by Lumite Division, Chicopee Manufacturing Company of America, Dept. CP, 38-42 Worth St., New York 13, N. Y.)

Studying concrete under controlled conditions of temp., humidity . . .

special concrete mixer and block-making machine also being used in research program

Armour Research Foundation of the Illinois Institute of Technology, Chicago, is using a new 100% humidity curing room to study stronger, cheaper, lighter concrete blocks for building uses. An air conditioned, constant temperature room, special concrete mixer, block-making machine, and testing equipment are also used to make blocks that will meet Government specifications for safe building materials.

A light weight aggregate, developed at the Foundation from expanded clay and shale, will be used to make building blocks weighing less than 30 lb. Sand and gravel blocks currently in use weigh 50 lb.

The procedure slows down the drying time of the blocks. Newly made blocks spend 2 weeks each in the curing and constant temperature rooms. Thorough curing cuts down contraction or expansion which may cause buildings to crack or fail. An atomizer in the curing room throws a fine spray of compressed air and water to maintain a saturated atmosphere which feels like a humid July day. Plastic and asphalt paint waterproof the floor, and a drain

in the center of the concrete floor catches excess moisture. An air conditioning unit keeps the constant temperature room — located next to the curing room — at 73°F and 50% humidity. Here small concrete specimens will be made and tested, and large concrete blocks will be dried.

Concrete will be mixed and blocks will be formed in the preparation room, where the mixer and block maker have been installed.

Load bearing blocks designed to support rafters, ceilings, and the weight of people must meet minimum test requirements of 1000 psi after curing and drying 28 days. Non-load bearing blocks, used for installation and decoration, must support a load of 75 lb.

Studies will determine changes caused by freezing and thawing, wetting and drying, chemical action, and water absorption. Research will be made on cement, lime, and gypsum products.

(Information received from Armour Research Foundation, Illinois Institute of Technology, Dept. CP, Technology Center, Chicago 16, Ill.)

**Phthalic anhydride handled
at low cost in tanks, cars
of black iron . . .**

with proper care this construction can be used in place of stainless steel

With proper care, phthalic anhydride can be handled, stored and shipped in black iron tanks rather than the more expensive stainless steel. Illustration shows one of two cars embodying such construction used by Monsanto Chemical Company. Each has a capacity of 10,140 gallons.

Steam to melt the phthalic prior to unloading is applied to a series of half-round pipes welded to outer shell of the car. These heating pipes, as well as the entire tank and dome, are insulated with Fiberglas. This insulation is covered with a metal protection shell as is usual practice for insulated tank cars. Heating assembly design

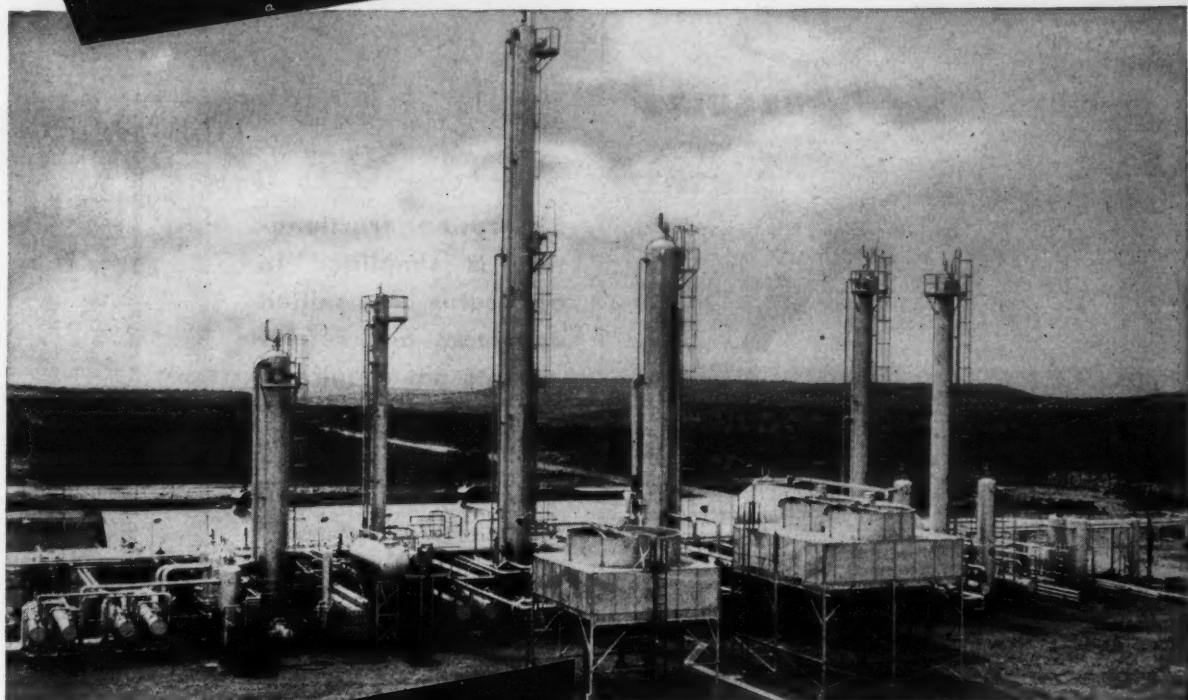


Car of black iron construction holds 10,140 gal

provides an even distribution of the steam and makes possible quicker unloading of the cars at lower steam pressure than that required by normal, internally coiled cars.

Cars were built by American Car and Foundry Company to design and construction specifications worked out in cooperation with Monsanto. (Monsanto Chemical Co., Dept. CP, St. Louis 4, Mo.)

**Reduce
Fouling in your plant**



with **BROWN
FINTUBE**

**sectional hairpin
heat exchangers**

● Brown Sectional Heat Exchangers, with their integral one-piece extended surface fintubes, reduce fouling, just a few hundredths of an inch of which on a tube causes a major loss in heat transfer efficiency.

These exchangers assure efficient operation at low "skin" temperatures, minimizing coking and building up on the fintubes. And the controlled flow through the longitudinal passages keeps all the material in continuous motion. There are no baffles, back-eddies or stagnant areas to encourage fouling.

For top operating efficiency and reduced fouling use Brown Sectional Heat Exchangers throughout your plant. Write for Bulletin No. 481.

**THE BROWN FINTUBE CO.
Elyria, Ohio**

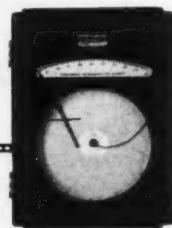
Sectional Hairpin Heat Exchangers
Tank Suction and Line Heaters
Fintube Heaters for Bulk Storage Tanks
Indirect Process Air Heaters
Fintube Heaters for Processing Tanks
Integrally Welded Fintubes for Any Heating,
Cooling or Heat Transfer Service

NEW YORK • BOSTON • PHILADELPHIA • WILMINGTON • PITTSBURGH • BUFFALO • CLEVELAND • CINCINNATI • DETROIT • CHICAGO
ST. PAUL • ST. LOUIS • MEMPHIS • BIRMINGHAM • NEW ORLEANS • TULSA • HOUSTON • LOS ANGELES • SAN FRANCISCO

POWER



BUILDERS PROPELOFLO LIQUID METER has the power needed to drive secondary instruments or to pace chemical feeders. This propeller-type meter combines a highly efficient power transmission system with the tested and proven Venturi body design. These two important features assure accurate flow metering over the widest range of flow rates . . . from the lowest, to flows as high as 50% above rated capacity. Even under low flow conditions, Propeloflo Meter retains its power for driving secondary instruments and pacing feeders accurately and dependably. It will pay you to use Propeloflo — available for main and auxiliary lines from 2" to 36". For Bulletin 380-G2, address Builders-Providence, Inc. (Division of Builders Iron Foundry), 387 Harris Ave., Providence 1, R. I.



Flexible cable (up to 25 ft.) for driving secondary instruments, etc.



BUILDERS **PROVIDENCE**
Instruments

BUILDERS makes a complete line of flow meters and controllers for liquids, steam, air, gas, and dry materials . . . mechanical and differential . . . including The Venturi Meter and Chlorinizers (chlorine gas feeders).

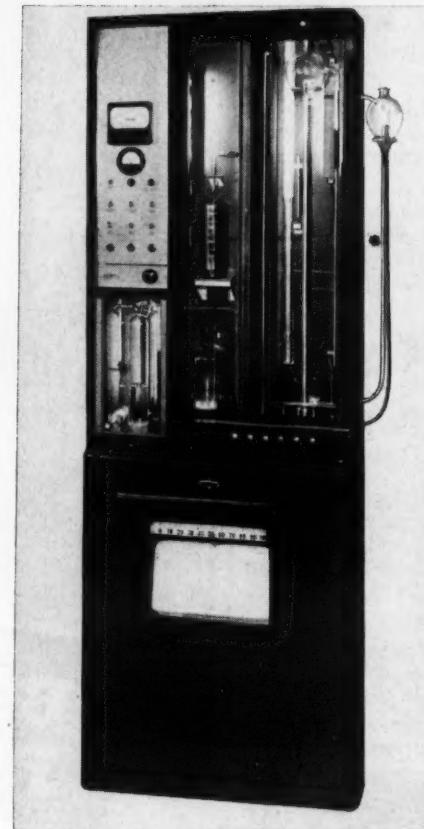
Analyzes 300-ml Light Hydrocarbon Gas Samples to 0.2% Accuracy in 1-3 Hour's Time

Adsorption fractionation is simplified in apparatus — skilled operators and refrigerants not required

USES: Laboratory apparatus for rapid and accurate analysis of light hydrocarbon gases, through and including pentanes.

Features: New and simplified method of adsorption fractionation. Provides an analysis in 1 to 3 hours with as little as 300 milliliters of sample, as contrasted with previous methods requiring from 6 to 8 hours for analysis.

Accuracies on the order of 0.2% are obtainable. Gases containing predominantly light fractions, which present analysis difficulties by other methods, may be analyzed reliably. Operators need not be highly skilled, and no liquid air or other refrigerants are re-



Front view of gas analyzer employing new and simplified method of adsorption fractionation

quired. Connection to electric outlet is the only requirement for immediate operation.

Description: Adsorption fractionator is a single, self-contained piece of apparatus. In it, gases are separated, identified, and measured by volume of separated fractions. Physical adsorption provides separation. Identification is by measurement of thermal conductivities. Volume of each fraction is arrived at by determining the change in pressure of an evacuated system.

Identification and measurements of the gas fractions are recorded on a potentiometer, providing a complete and automatic record of each analysis. Dimensions of the apparatus are 3' wide x 2' deep x 6' high.

Source: Details of the adsorption fractionator, as well as aid with problems of gas analysis with the apparatus, are available from the Burrell Corporation, Dept. CP, 2223 Fifth Ave., Pittsburgh 19, Pa. . . or for more information check CP 5461 on handy form, pages 2 and 3.

Stainless steel cases house thermometers . . .

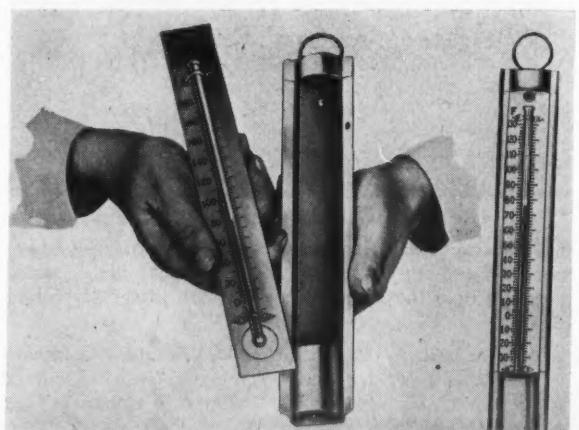
tube and scale units easily replaceable if broken

Uses: General-purpose thermometer for either indoor or outdoor usage. Five different scales cover portions of the temperature range from minus 40 to plus 400°F.

Features: Furnished in a heavy, corrosion-resistant stainless steel case.

Description: Removable tube and scale unit of the Model 8689 thermometer permits easy replacement in the event the tube should get broken.

Source: Development of the Tagliabue Instrument Division of the Weston Electrical Instrument Company, Dept. CP, Newark 5, N. J. . . or for more information check CP 5462 on handy form, pages 2 and 3.

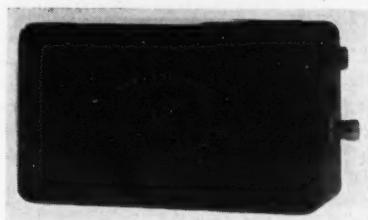


'Low price' highlights
general-purpose
Geiger counter . . .

sensitivity not spared; fits in palm of hand

Uses: Geiger counter intended for civilian defense, prospecting, school, and general plant use. Detects signals originating from uranium ore, cosmic rays, radium, X-rays, or atomic explosion.

Features: Low priced instru-



Miniature, sensitive Geiger counter

ment', sensitive, so small that it will fit in the palm of the hand.

Description: "Snooper" uses an ordinary flashlight battery for power. A miniature amplifier gives a loud audible signal in the presence of radioactivity.

Supplied in plastic case, complete with earphone, radioactive sample, and operating instructions. Dimensions are $1\frac{1}{2} \times 3 \times 5"$; weight is $1\frac{1}{4}$ pounds.

Source: Product of Precision Radiation Instruments, Inc., Dept. CP, 4113 W. Jefferson Blvd., Los Angeles 16, Calif. . . . or for more information check CP 5463 on handy form, pages 2 and 3.

Redox, pH, conductivity measured, controlled

Measurement of pH, oxidation-reduction, and conductivity in industrial control systems is comprehensively covered in 24-page bulletin. Fundamental principles of electro-chemical measurements as well as final control elements for automatic control systems are included.

Bulletin contains photographs, tables, graphs, and charts; text presents much theoretical and practical information as well.

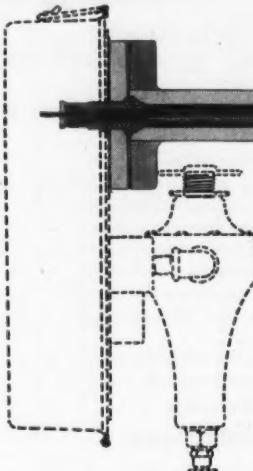
Technical Bulletin B51-2 is issued by Minneapolis-Honeywell Regulator Company, Brown Instruments Div., Station 40, Dept. CP, Wayne and Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 5464 on handy form, pages 2 and 3.

For more information on product at right, specify CP 5465
see information request blank between pages 2-3.

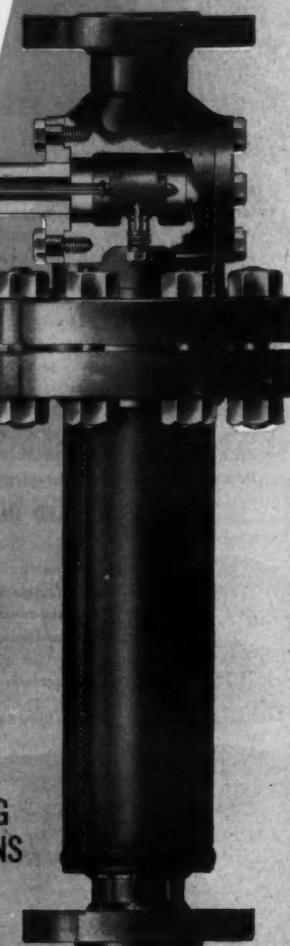
NEW!

*...all these features
incorporated into
one*

Liquid Level Control



VERTICAL
FLANGED
EQUALIZING
CONNECTIONS



- Naturally, BS&B "Climax" would build this new Type 888 with more than 12 years' development and field testing behind it. Exclusive, patented features . . . integrated with versatile new ideas, have resulted in • New CONE POINT PIVOT, reduces bearing friction to minimum. It's rugged, friction-free and easily replaceable in the field. • Torque tube housing is removable and reversible without special tools and without dismantling Controller housing • Reversible feature permits installation of two torque tube housings and two pilots and/or pilot and mercury switches. This means simultaneous liquid level control and alarm or emergency circuit operation • Smaller cage housing reduces weight, but heavier walls and flanges increase safety • All flange connections are male and female, assuring perfect alignment. Tighter connections with metal-clad gaskets • Obtain any combination of equalizing connections . . . vertical or horizontal or combinations of the two.

For new, fully illustrated catalog, write today for the new BS&B "Climax" Type 888 Liquid Level Controller Section 103.

BLACK, SIVALLS & BRYSON, INC.

7502 East 12th Street Adv. Dept. Rm 50M
Kansas City 3, Missouri

BS&B

"Climax"
CONTROLS

Beckman pioneers another instrumentation advancement . . .

SINGLE BEAM direct Transmittancy recording

with
BECKMAN
infrared
spectrophotometers

NEW SINGLE BEAM SYSTEM IS SIMPLE, ACCURATE, RELIABLE

The Beckman Single Beam Direct Transmittancy Recorder employs the memory standardization principle, using reliable electronic circuits instead of complicated mechanical-optical arrangements. It successfully combines the highest accuracy with the utmost in reliability and convenience. A standardizing run is made on the empty or solvent-filled absorption cell. During this run the signal from the photoreceiver is automatically maintained constant, and the resulting slit width vs. wavelength function is "memorized" on a wire recorder. The sample is then placed in the same cell, and information played back from the wire recorder automatically controls the wavelength and slit drive motors to reproduce precisely the conditions which produced the constant 100% reference level. Any absorption resulting from the sample is accurately and automatically recorded directly in transmittancy. On repeat runs, the same reference wire is used, eliminating repetition of standardizing measurements.

Single beam transmittancy recording retains the excellent resolution, low stray light, high stability and drift freedom, and the wavelength accuracy of the well-known Beckman Spectrophotometers. Other advantages are summarized at the right.

THREE UNEXCELLED INSTRUMENTS FOR ANY REQUIREMENT

Beckman Single Beam Direct Transmittancy Recording is available either (1) as an accessory unit for direct installation on any Beckman IR-2 Spectrophotometer, or (2) with the IR-2 as a complete instrument, or (3) in the new unsurpassed Beckman IR-3 Spectrophotometer—the most versatile, most accurate, most complete—and by all standards, the finest spectrophotometer money can buy.* For further information on these instruments write . . .

Beckman Instruments, Inc., South Pasadena 11, California.

Factory Service Branches: NEW YORK • CHICAGO • LOS ANGELES

BECKMAN INSTRUMENTS
control modern industries

*As in all Beckman instruments, your money buys more value than in any similar product.



Beckman Instruments include: pH Meters and Electrodes — Spectrophotometers — Radioactivity Meters — Special Instruments

When inquiring check CP 5466 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

Response of under $\frac{1}{2}$ second credited to vacuum gauge

Two-page catalog presents details on vacuum gauge with range from 1 to 1000 microns of mercury. It is recommended for all vacuum processes in this range, but its rapid response of less than $\frac{1}{2}$ second makes it particularly fit for leak detection, warning devices, and pressure-operated control systems. Scale reading is directly in microns of mercury. Calibration is not affected by exposure to atmospheric pressure or changes in ambient temperature.

Illustrations, specifications, and other details are given in Catalog 104, issued by Hastings Instrument Co., Inc., Dept. CP, Super Highway & Pine Ave., Hampton, Va. When inquiring specify CP 5467 on handy form, pages 2 and 3.

Supply items announced for pyrometer users . . .

thermocouple protecting tube . . . thermocouple wire . . . thermocouple extension wire

Uses: Supply items for users of pyrometers.

Description: A cast iron, closed-end protecting tube for molten aluminum applications features a service life several times that of former models. The tube is described as being of dense cast iron having a smooth outer skin. Tube has a 1-15/16" OD by 13/16" ID and is available in lengths of 12, 18, 24, 30, and 36".

A 2-connector, 24-gauge copper-constantan thermocouple wire has been developed for refrigeration applications. It has a moisture-proof polyvinyl chloride insulation. Over-all dimensions are approximately 3/64 by 3/32". Field tests show the thermocouple has a temperature range from minus 20 to plus 225°F. Where flexing does not occur, the lower limit is below minus 30°F. It has a high moisture and abrasion resistance and is safe to flex within temperature limits.

A 20-gauge JX and KX 2-conductor insulated extension wire with standard ISA wire color coding in both iron-constantan and Chromel-Alumel components. Each wire is insulated with enamel, covered by moisture and flame resistant, wax-impregnated asbestos. The two conductors are covered over with a heavy Fiberglas braid.

Source: Announced by the Brown Instruments Division of the Minneapolis-Honeywell Regulator Co., Dept. CP, Wayne and Windrim Aves., Philadelphia 44, Pa. . . . or for more information check CP 5468 on handy form, pages 2 and 3.

Accuracy in nephelometry depends upon correct instrument voltage . . .

transformer supplies nephelometer with constant voltage despite line fluctuations

Many instruments depend upon a proper, non-fluctuating supply voltage for their proper functioning. This is especially true of the nephelometer. This instrument requires a constant supply voltage in order to produce a beam of light of non-varying intensity for spotlighting impurities in liquids. Voltage fluctuations, resulting from a variety of causes, cannot be tolerated since they produce erroneous measurements.

A means for circumventing supply voltage variations — no

PROCESS INSTRUMENTATION

matter what they may be — is illustrated in the photonephelometer made by Coleman Instruments, Inc., Maywood, Ill. Here, a steady 6-volt, 60-cycle supply is required, and is continually supplied by a separate constant



Despite fluctuations in line voltage, constant voltage transformer (left) supplies nephelometer (right) with constant voltage to produce a beam of light of non-varying intensity for accurate measurement of impurities in liquids

voltage transformer connected in the instrument circuit. Proper performance of the instrument can be expected at all times.

The nephelometer is finding important applications in measuring the unappealing cloudiness in beverages, and in detecting bacterial contamination in serums. It is being used for detecting impurities in water that threaten boiler efficiency and operation.

(Constant voltage transformers are products of the Sola Electric Company, Dept. CP, 4633 W. 16th St., Chicago 50, Ill. . . or for more information check CP 5469 on handy form, pages 2 and 3.)

Compensated strain gage eliminates "dummy"

Use of separate compensating gage or "dummy" can be eliminated by using temperature compensating gage detailed in 2-page bulletin. Specifications and data for type used with annealed mild steel and 24S-T6 dural are given. Single, dual, and rosette types are available. Bulletin 174 is issued by Testing Equipment Dept., Baldwin-Lima-Hamilton Corp., Dept. CP, Philadelphia 42, Pa. When inquiring specify CP 5470 on handy form, pages 2 and 3.

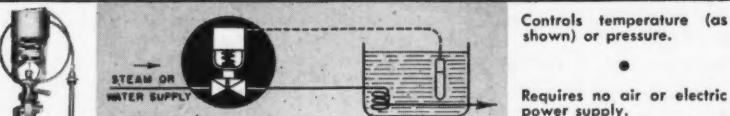
Index of available instrument bulletins featured

Four-page bulletin acts as a condensed catalog of manufacturer's types. Fifteen instruments and accessories are illustrated as typical examples of type. Single and multiple point recorders, three types of single and multiple controllers, and six types of indicating instruments are listed and briefly described. In each case a reference is given to manufacturer's bulletin covering the indicated group. In addition to these, three special sets of controllers and accessories are similarly covered in a separate section. Basic operating principle of the instruments is explained. Bulletin Z6700 is issued by Wheelco Instrument Co., Dept. CP, 847 W. Harrison St., Chicago 7, Ill. When inquiring specify CP 5471 on handy form, pages 2 and 3.

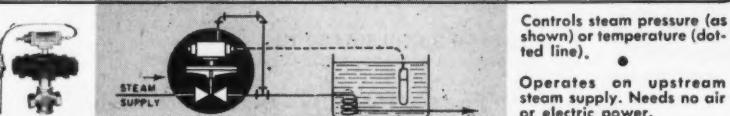
Automatic CONTROL ...at its Simplest!

TAG Non-Indicating Controllers Regulate Temperature and Pressure

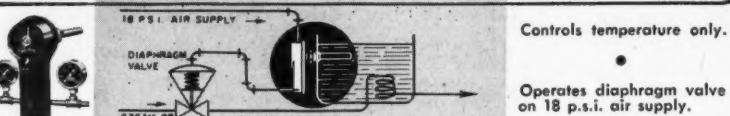
SELF OPERATED TEMPERATURE OR PRESSURE CONTROLLER



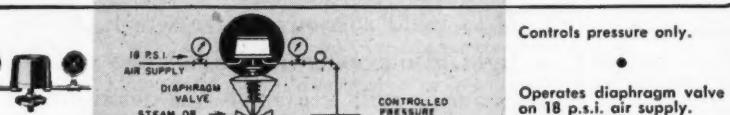
STEAM OPERATED TEMPERATURE OR PRESSURE CONTROLLER



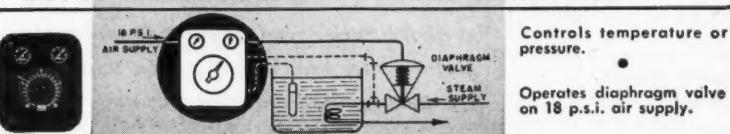
"FAULTLESS" TEMPERATURE CONTROLLER



"SIMPLEX" PRESSURE CONTROLLER



NO. 42 TEMPERATURE OR PRESSURE CONTROLLER



Long life, trouble-free service and ease of maintenance are inherent characteristics of TAGliabue Non-Indicating Controllers. When your purpose is to devise a temperature or pressure control system at its simplest, these TAG controls will often prove the answer. Send now for your copy of Catalog No. 900, which gives you 36 pages of detailed data on these instruments and related equipment.

TAGLIABUE INSTRUMENTS DIVISION

WESTON ELECTRICAL INSTRUMENT CORPORATION
614 Frelinghuysen Avenue, Newark 5, New Jersey

TAGliabue Pressure Recorder Charts Up To 7,500 P.S.I.

Catalog No. 1210 Recording Pressure Gages, available from TAGliabue Instruments Div., Dept. 67, Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 5, N. J. combine simple design with accurate calibration. They provide permanent records of vacuum or pressure on either 10-inch or 12-inch circular charts.

Interchangeable tube systems of these TAG instruments are laboratory calibrated at the factory. Safety links provide over-range protection. These recorders are supplied in various ranges between the limits of 30 in. vacuum and 7,500 lb. per sq. in. pressure.

TAGliabue Dial Thermometers Provide Remote Indications

Temperatures are accurately shown at a distance from the sensing element with the Dial Indicating Thermometers produced by TAGliabue Instruments Div., Dept. 67, Weston Electrical Instrument Corp., Newark 5, N. J. These sturdy devices are furnished with mercury, gas filled or vapor tension actuators in 5, 6 and 8" dial sizes.

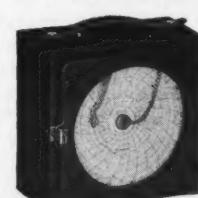
The plain black pointer and figures make TAG Dial Indicating Thermometers easy to read. The instruments are made in two types, for flush or wall mounting, with cases of iron, brass or phenolic plastic. Models are available to indicate as low as -325°F. or as high as 1000°F.



Temperatures in Mobile Units Charted by Miniature Recorder

A continuous record of temperatures in heated, refrigerated or air conditioned spaces is provided by a miniature self-contained recording thermometer developed by TAGliabue Instruments Div., Dept. 67, Weston Electrical Instrument Corp., Newark 5, N. J. This new instrument, known as the TAG Model 8475 Miniature Recorder, requires no connection to any power supply, yet charts temperatures for as long as seven days without attention.

Its unique design eliminates need for shockproof mounting. Temperatures as low as -30°F. or as high as +220°F. can be recorded. The instrument measures 5 1/4" x 5 1/4" x 4 1/4", and weighs 3 1/2 pounds.



When inquiring check CP 5472 on handy form, pgs. 2-3

**Recorder plots two variables
on rectangular coordinates**

Four-page, 2-color bulletin gives data on portable, self-contained recorder which will automatically plot on rectangular coordinates any 2 variables that can actuate the movable cores of miniature variable transformers, either directly or through accessory Bourdon tube units. Bulletin 330 is issued by Baldwin-Lima-Hamilton Corporation, Dept. CP, Philadelphia 42, Pa. When inquiring specify CP 5473 on handy form, pages 2 and 3.

**Scintillation scaler also
serves as proportional
and Geiger counter . . .**

embodies three features necessary for successful scintillation counting

Uses: For scintillation counting, also for Geiger and proportional counting.

Features: Has three basic advantages necessary for successful scintillation counting: 1) a fast linear amplifier with a rise time of 0.25 micro-seconds and a variable amplification from 0 up to 2000, 2) an electronic discriminator which accepts pulses from -100 to + 50 volts, and 3) a well regulated high voltage supply which is variable from 500 to 2000 volts and is regulated to 0.005% per 1 volt change in line voltage between 95 and 130 volts.

Description: Scintillation Scaler's scaler portion makes use of the reliable portion of the Higinbotham scale of 128, incorporating 6SN7 tubes and has a revolving time of 2 microseconds. Interpolation lights, a 6-digit electromagnetic register, and a 60 cycle test switch for convenient checking of scaler performance, are mounted on an attractive anodized aluminum front panel.

Source: Nuclear Research and Development, Inc., Dept. CP, 1094 Sutter Ave., St. Louis 5, Mo. . . or for more information check CP 5474 on handy form, pages 2 and 3.

**Multiple point recorders
Illustrated, explained**

Four-page, 2-color bulletin explains multiple point printer-type recorders handling up to 6 records at the same time. Deflection type measurement, electronic linkage, and chart printing mechanism are described. Photographs, specifications, and a list of models available are given. Bulletin MPC-1 is issued by Wheelco Instruments Co., Dept. CP, 847 W. Harrison Street, Chicago 7, Ill. When inquiring specify CP 5475 on handy form, pages 2 and 3.

**Eliminates all paperwork
in continuous sampling
quality control . . .**

monitor permits maximum sampling, minimum inspection

Uses: Automatically keeps a record of continuous sampling inspection procedures usually employed on a production line to maintain desired outgoing quality. Informs the inspector whether sampling or 100% sorting is required.

Features: Insures an average outgoing quality level,

Use the C_Q Method—

Evaluate All The Quality Factors IN SELECTING CONTROL VALVES

"Quality" is only a word—which has no real number or scale; but, by definition, it implies comparison and by common usage it connotes high value.

The C_Q (Quality Coefficient) method sets a standard—which is necessarily also intangible but one which could, if you wished, be given an arbitrary numerical expression.

Our standard of design and manufacture is to build a control valve which, in the light of our extensive knowledge and experience, will live up to our definition of quality, i. e.:

"A high quality product provides accurate performance over a long period with a minimum of maintenance and operation delays."

Your standard in selecting control valves is undoubtedly very similar, based on your own experience.

We suggest your using the C_Q method in comparing control valves. Set a standard; evaluate *all* the quality factors in the valves considered. (As a reminder, a list of some of these is printed here.) The sum of all quality factors of a valve is its C_Q (Quality Coefficient). Then when you compare price, consider that the invoice figure is only the first cost—the real cost might be expressed

$$\text{Real Cost} = \frac{\text{Price}}{C_Q}$$

for you will agree that for the same investment, the higher the quality the lower the actual over-all cost.

Compare Masonelan Control Valves with *any* others—use the C_Q Method.

Check For These Diaphragm Motor Quality Factors

Performance Factor

Effective Diaphragm Area
Stroke Length
Response to Air Pressure Changes
Stroke vs. Air Pressure Relationship
Guide Design for Minimum Friction

Maintenance Factor

Strength of Spring Stem and Diaphragm Button Assembly
Size of Springs vs. Effective Area and Stroke of Motor
Diaphragm Design for Reproducible Stroke
Motor Guiding for Friction Free Operation

Maintenance Factor

Accessibility of Valve Stuffing Box
Convenience of Spring Adjustment

Mechanical Construction Factor

Diaphragm Case Air Pressure Rating
Diaphragm Case to Yoke Fastening
Rigidity and Strength of Yoke
Yoke Connection to Body Assembly

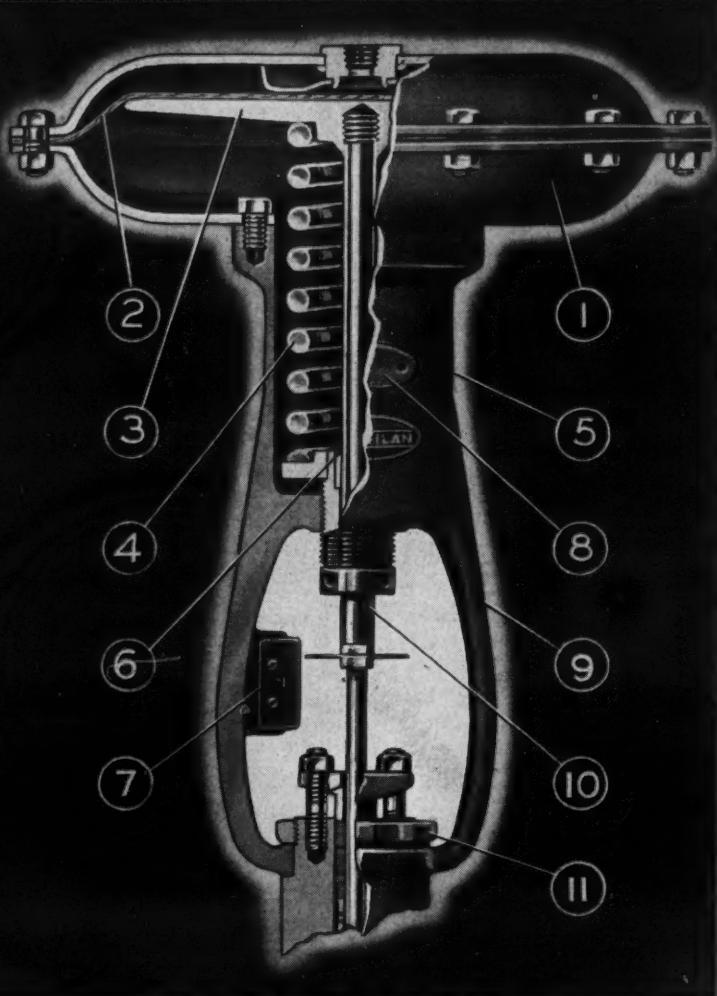
Convenience Factor

Provision for Mounting Instruments and/or Accessories
Adaptability to Air-to-Close or Air-to-Open Action
Provision for Various Types of Handwheels
Selection of Stroke and Spring Range

Appearance Factor

Low Over-all Height
Smooth External Contours
Compactness
Serial Plate Information
Travel Indicator Design
Ability to Withstand Rough Handling
Strength of Stem and Stem Connections
Protection of Spring and Diaphragm

PROCESS INSTRUMENTATION



**For Example Consider
the Diaphragm Motor
of Masoneilan 10,000
Series Control Valves**

1. **Steel Diaphragm Case** for high mechanical strength, lightness, high safety factor in case of severe over-pressuring. Parkerized inside and out for corrosion resistance. $\frac{3}{4}$ " or $\frac{1}{2}$ " air connection fitting welded inside case for better appearance. Initial stop inside case establishes correct stroke with respect to diaphragm position. Through bolted construction for ease of disassembly — avoids moisture-collecting pockets which cause rusting. Permits use of flat stock diaphragms in emergency. Adapted to case-mounted handwheels. Provides for reverse-acting motors for valves with non-reversible plugs.
2. **Preformed Diaphragm** of rubber or neoprene with fabric insert — designed to provide maximum practical effective area throughout stroke. Provides frictionless self-aligning upper guide. Beaded edge adds insurance against leakage.
3. **Steel Diaphragm Button** — compact and strong — welded to spring stem, preventing possibility of disengagement in the event of excess line vibration.
4. **Heavy Springs** for low stress — prevents breakage and permanent set. Calibrated for 3-15 or 6-30 psi ranges. Japanned for corrosion resistance. Exterior adjustment for ease of setting spring initial — has ball thrust bearing on larger size valves.
5. **Cast Iron Yoke and Spring Barrel** have heavy cross-sections for rigidity and mechanical strength; will not deform in rough handling, causing misalignment. Inherently corrosion resistant. Inclosed spring barrel protects springs. Unusually large opening in yoke provides ease of access to stuffing box and positioner linkage — makes stroke scale easily readable. Yoke designed for side mounted handwheels.
6. **Oilite Bronze Lower Guide** together with self-aligning frictionless upper guide in diaphragm insures alignment, minimum friction.
7. **Stroke Scale** graduated in $\frac{1}{16}$ " of actual travel. Rated stroke marked on plate. Indicator index always at same position on spring stem — aids in stem adjustment on assembly.
8. **Mounting Pads** — front and rear, provide for mounting controller, positioner and/or air set.
9. **Serial Plate** has full valve specifications — materials, rating, spring range, direction of travel — even an etched picture of type and seating direction of plug.
10. **Large Diameter Spring Stems** for strength; direct threaded connection to valve stem without use of adapters; plus Keylock on sizes 3" up.
11. **Motor to Bonnet Connection** by means of heavy, large diameter, forged steel drive nut, for strength and true alignment.

THE MASONEILAN 10,000 SERIES CONTROL VALVE IS

A High C_v Product

MASON-NEILAN REGULATOR CO.

1203 Adams Street, Boston 24, Mass., U. S. A.

Sales Offices or Distributors in the Following Cities

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Mason-Neilan Regulator Co., Ltd., Montreal and Toronto

YOU CANNOT INSURE FULL C_v WITHOUT A HIGH C_v

See our exhibit in Booth 214-216 at the Sixth National Instrument Exhibit, Sam Houston Coliseum, Houston, Texas, September 10-14, 1951.

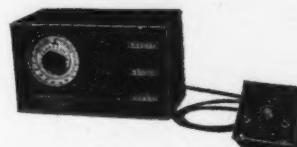
When inquiring check CP 5476 on handy form, pgs. 2-3

eliminates paperwork by the inspector, and cuts inspection time.

Description: In continuous sampling inspection, a given number of consecutive acceptable units is established by 100% inspection. This 'clearance' number, and the percentage number to be used for sampling, are determined by the desired average outgoing quality level, selected from a set of curves supplied.

When the clearance number is reached, sampling begins. The prescribed percentage of units is inspected until an unacceptable unit is found. This defective unit is replaced by a good unit, and the 100% inspection is followed again until the clearance is reached, at which time sampling resumes. This procedure continues; each time a reject is found, it is replaced with a good unit, and 100% inspection is followed until the clearance number is re-established.

To operate the Continuous Sampling Monitor, the inspector pushes one of two buttons — "accept" or "reject" — after each inspection. He then follows directions shown by one of two indicating lights; he inspects every unit while the red light is on, and samples while the white light is on.



Monitors continuous sampling

Briefly, it functions thus: An electric counter, set to any predetermined number from 1 to 400, automatically keeps track of the clearance number. When the counter reaches the set number, contact is broken, and the white sampling light goes on to indicate that the predetermined number of acceptable units has been inspected, and that sampling can resume. Percentage inspection or sampling may vary from 1 to 50%, depending on the average outgoing quality level.

Monitor is contained in a small cabinet about 12 x 6 x 6". Control box, located so that the inspector can easily operate the pushbuttons and read the indicator lights, is 4 x 4 x 2", and is connected to the monitor by cable. Monitor requires 110 volts and has a maximum counting speed of 500 units per minute.

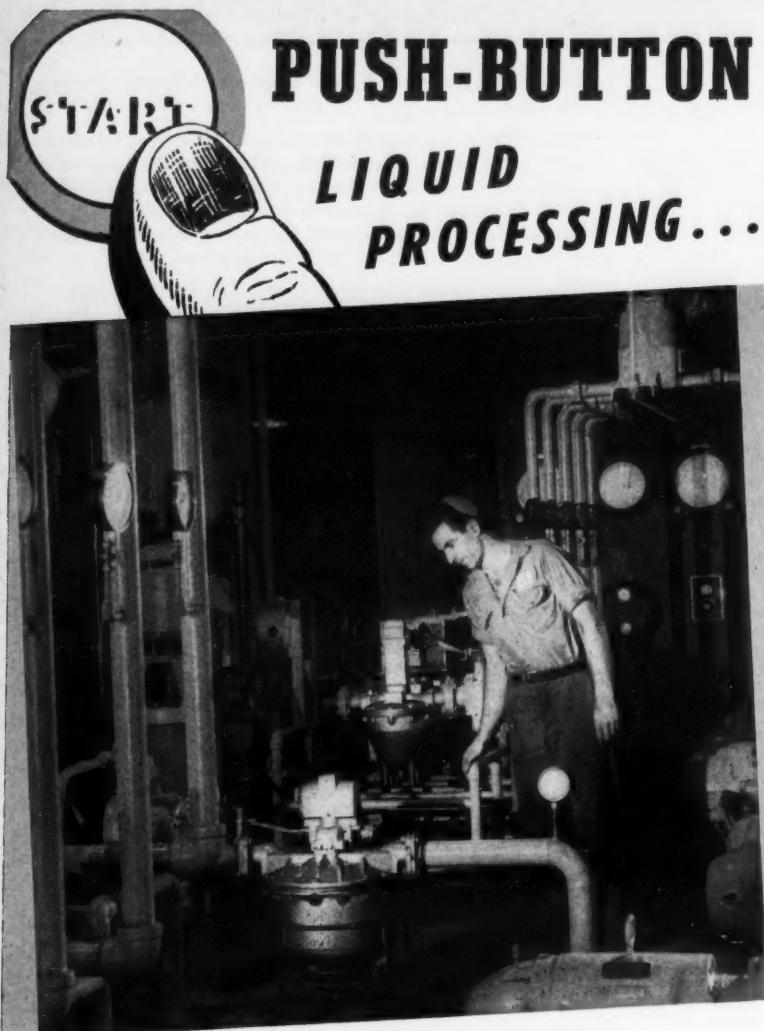
Source: Development of the General Electric Company, Dept. CP, Schenectady 5, N. Y. . . or for more information check CP 5477 on handy form, pages 2 & 3.

Instrumentation described

Non-technical story of instruments used in various fields is given in 12-page booklet. "It's All Done With Instruments" is issued by Weston Electrical Instrument Corp., Dept. CP, 614 Frelinghuysen Ave., Newark 5, N. J. When inquiring specify CP 5478 on handy form, pages 2 and 3.

Case histories and illustrations show viscous liquid valves

Bulletin contains illustrations explaining the performance of spring-loaded valves for viscous and solids-containing liquids. Case histories deal with typical installations. Bulletin W-404-B4 is issued by Worthington Pump and Machinery Corp., Dept. CP, Harrison, N. J. When inquiring specify CP 5479 on handy form, pages 2 and 3.



PUSH-BUTTON LIQUID PROCESSING...

Here's the way to CUT CORNERS in your liquid processing operations. It's as easy as push-button tuning on your radio.

And all you do is PUSH A BUTTON to distribute liquids from storage tanks direct to mixers.

Bowser processing meters cut out double pumping, measuring tank or tank scales. You get hairline accuracy in predetermined quantities . . . constantly uniform products.

Bowser's nearest liquid processing engineer will welcome an opportunity to discuss your problems with you. If you prefer, we'll gladly send you our latest literature.

BOWSER, INC., 1315 CREIGHTON AVE., FORT WAYNE 2, IND.

• or call our nearest regional office • Atlanta • Chicago • Cleveland
Dallas • Kansas City • Los Angeles • New York • San Francisco
Washington, D.C.

LIQUID CONTROL SPECIALISTS SINCE 1885

When inquiring check CP 5480 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

Measures liquid level, density through container walls

Atomic energy-operated device for measuring liquid levels and fluid densities is explained and illustrated in 2-page data sheet. Device operates through container walls, thus eliminating seals and stuffing boxes. Instrumentation Data Sheet 10.4-la is issued by Minneapolis-Honeywell Regulator Company, Brown Instruments Div., Dept. CP, Station 40, Wayne and Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 5481 on handy form, pages 2 and 3.

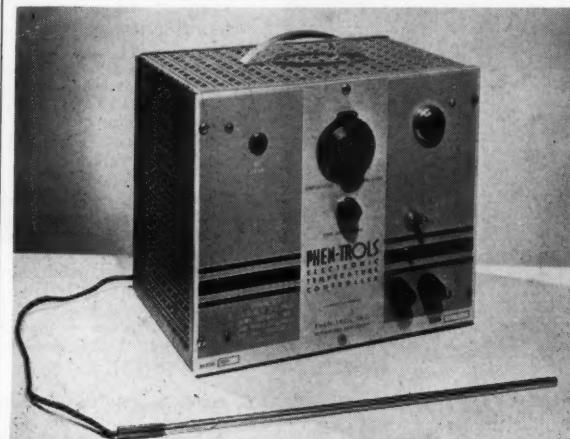
Holds temperatures of heating devices within $\frac{1}{2}^{\circ}\text{C}$. . .

turning dial to pre-selected temperature is all that is required to use electronic controller

Uses: For controlling the temperature of heated molds, immersion heaters, liquid baths, ovens, furnaces, laboratory heating jackets, and similar devices. Both laboratory and industrial applications are cited.

Features: Setting controller's dial to preselected temperature is all that is needed to maintain that temperature within an accuracy of 0.50°C .

Description: Electronic temperature controller is actuated by a stainless steel single thermocouple con-



Electronic temperature controller

nected to the heating device. It is designed to operate from any 115 v, 60 cps outlet, and will control circuits carrying up to 3,000 watts.

Unit is free from drift, double-fused for full protection, and has a safety feature in event of thermocouple or internal component failure. Twin plug-in receptacles are provided for hook-up of devices, solenoid, or auxiliary temperature controllers.

Source: Phen-Trols, Inc., Dept. CP, 15 Franklin Place, Rutherford, N. J. . . or for more information check CP 5482 on handy form, pages 2 and 3.

Bulletin lists meter materials for 200 corrosive liquids

More than 200 corrosive liquids are listed with appropriate materials of construction for manufacturer's type meter. Among the liquids considered are acetic and butyric acids, crude oil, furan, hexane, potassium chromate and sodium

FLASH DRY SAMPLES TO DETERMINE *Moisture*



FOR
ALL TYPES
OF SAMPLES
FIBROUS • GRANULAR
LIQUID • CRYSTALLINE

Samples of your materials can be dried and tested for moisture content in a matter of a few minutes. You will save valuable processing time, reduce rejections, and improve product quality, when you install a DIETERT-DETROIT MOISTURE TELLER.

The moisture test is made in exact moisture percentage and test results will check exactly with the standard oven test. No corrections or calibrations are necessary.

Write TODAY TO DEPT. M-8 FOR DETAILS

CONTROL EQUIPMENT
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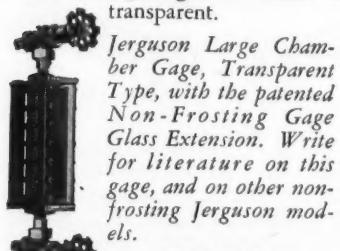
When inquiring check CP 5483
on handy form, pgs. 2-3

**More Accurate
Level Reading
of LOW
TEMPERATURE
LIQUIDS . . .
JERGUSON
Large Chamber
NON-FROSTING*
GAGES**

YOU get the highest possible accuracy of reading on low temperature, low boiling point liquids with the patented Jerguson Non-Frosting Gage in the New Large Chamber model . . . because it insures less turbulence at the meniscus, and clear vision at the vision slot.

This new Jerguson model has 6 times larger area at the meniscus than the standard gage, so that there is a marked reduction in turbulence with light gaseous fluids that tend to boil or surge. Moreover, the problem of frosting encountered with these liquids has been eliminated by a patented frost preventing unit extending from the gage glass. This special transparent unit projects beyond the cover bolts and prevents frost from building up over the vision slot.

Here's a dual feature gage that assures greatly increased accuracy of reading for the process industries. If you have a problem with light gaseous fluids, or with gage frosting, it will pay you to investigate the new Jerguson Large Chamber Non-Frosting Gage . . . reflex or transparent.



Jerguson Large Chamber Gage, Transparent Type, with the patented Non-Frosting Gage Glass Extension. Write for literature on this gage, and on other non-frosting Jerguson models.

*Patented

JERGUSON

Gages and Valves for the Observation of Liquids and Levels

JERGUSON GAGE & VALVE COMPANY
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Representatives in Major Cities
Phone Listed Under JERGUSON
Jerguson Tress Gage & Valve Co. Ltd., London, Eng.

When inquiring check CP 5484
on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

carbonate solutions, etc. Twelve-page bulletin also describes in detail the meter theory, and types available. Pipe size ranges from $\frac{1}{2}$ inch to 3 inches. Meters measure in gallons, Imperial gallons, barrels, or liters and have totalizer capacity up to seven figures. Specifications of six available types are given in detail and illustrated by drawings and photographs. Bulletin OG 400 is issued by Rockwell Manufacturing Co., Dept. CP, 400 N. Lexington Ave., Pittsburgh 8, Pa. When inquiring specify CP 5485 on handy form, pages 2 and 3.

**Explosion-proof housings
for pyrometer-type
controllers . . .**

instruments can control any process or function that is electrically measurable

Uses: Variations in this series of controls are suitable for controlling any process or function that is electrically measurable. Control of temperature, speed, thickness, and overload are examples. Applicable for safety shut-off and warning devices in chemical and nucleonic operations.

Features: Recently available with explosion-proof housings.

Description: The "Simplytrol" illustrated is a double contact, thermocouple pyrometer with temperature range of 0-1000°F. A



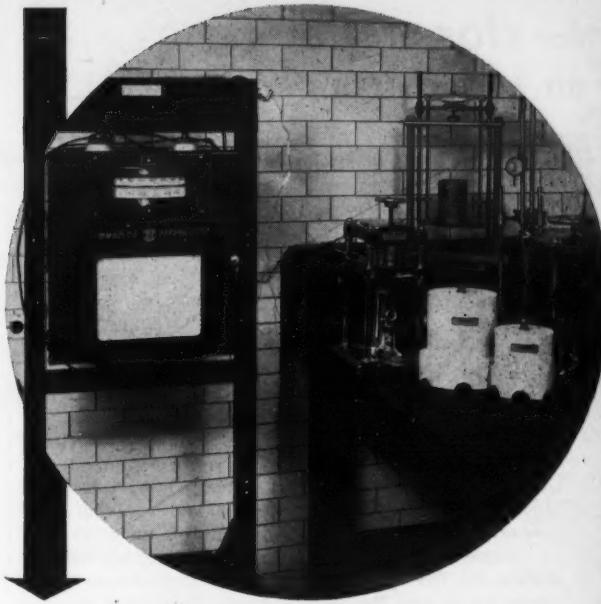
Pyrometer-type temperature controller in explosion-proof housing supplied. The high limit contact acts as a safety shut-off when temperature exceeds its limit due to heat given off by process. Since an explosive hazard existed in this installation, the explosion-proof housing was required. Controllers in this particular installation consist of a Panelmount Simplytrol Style 11, mounted in a standard Crouse-Hinds explosion proof Type GUB Instrument Condulet.

Source: Catalog 1A, containing complete details, is available from Assembly Products Inc., Dept. CP, Main at Bell St., Chagrin Falls, Ohio . . . or for more information check CP 5486 on handy form, pages 2 and 3.

**Uses for these instruments
include pH testing**

Twelve-page catalog describes and illustrates colorimetric comparator line for pH and water testing. All models are equipped with plates or discs containing non-fading glass color standards established in analyses of water, sewage, and industrial waste. Catalog 600-10 is issued by Hellige, Inc., Dept. CP, 3718 Northern Blvd., Long Island City 1, N. Y. When inquiring specify CP 5487 on handy form, pages 2 and 3.

Coe Laboratories, Chicago—Wheelco Capacilog recording temperatures of inlay wax burnout furnaces.



**Instrumentality...
for recording**

Yes, it's the Capacilog strip chart recorder—versatile enough to be used in chemical processing, laboratories, ceramic production, heat treating, plastic manufacturing, oil refining and wherever the highly accurate measurement, control and permanent record of process variables is needed—at one or more checking points.

Whether the Capacilog is applied for temperature, speed, static strain loads, AC-DC voltage, amperage or other electrically measurable factors, it proves itself a simple, versatile instrument which does a complex job accurately, efficiently and economically.

That's why every day more and more of the nation's leading chemical processors are specifying the Wheelco Capacilog and getting the plus benefits of Wheelco Instrumentality.

Follow the leaders . . . specify the Wheelco Capacilog—despite present day shortages most Capacilog models being built on a production line schedule are available for 30 day delivery.



Investigate the low-cost Capacilog line of strip chart recorders today—write for Bulletin C2 for complete details. See how Capacilog versatility makes it adaptable to a variety of applications.

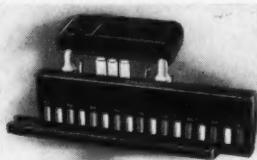
Wheelco Instruments Company, 841 West Harrison Street, Chicago 7, Illinois.

wheelco  **electronic controls**

When inquiring check CP 5488 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

**pH, CHLORINE
AND PHOSPHATE
DETERMINATIONS
SIMPLIFIED
TO A
2-MINUTE
OPERATION!**



Simply place reagent treated sample in middle tube in base, with untreated samples flanking. Move Color Standard until colors match and...

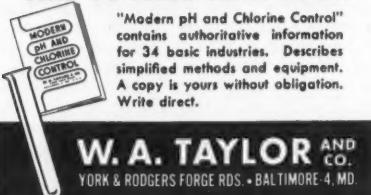
There's the Value!

**COLOR STANDARDS
CARRY UNLIMITED
GUARANTEE
AGAINST FADING!**

A single, portable, molded plastic slide contains all color standards necessary for any one determination. No fragile single standards to handle. Taylor sets include slides, base and all accessories. Accuracy is assured because all Taylor Liquid Color Standards carry UNLIMITED GUARANTEE against fading.

See your dealer for this versatile equipment.

FREE 96-PAGE DATA BOOK



When inquiring check CP 5494 on handy form, pgs. 2-3

JULY, 1951

matic pumps and machines to forecast the need of servicing and the replacement of worn parts... checking the number of hours of operation of equipment or material to be tested in laboratories, etc.

Features: Compact, accurate, hermetically sealed, and reported to have a life span approximately five times greater than unsealed instruments. Meets the Armed Service's requirements.

Description: Running Time Meter consists essentially of a self-starting synchronous motor which actuates a register through a gear train.

Source: Development of The R. W. Cramer Company, Inc., Dept. CP, Centerbrook, Conn. . . . or for more information check CP 5495 on handy form, pages 2 and 3.

**800°F top limit of
general-purpose
pyrometer . . .**

portable, direct-reading unit uses variety of special thermocouples, any of 4 scale ranges

Uses: General-purpose, self-contained, portable pyrometer for rapid determination of temperature up to 800°F.

Features: A choice of four scale calibrations allows the most effective use of the scale range. Available for use with the instrument are a ribbon, a face tip, two needle, and other specially designed thermocouples and extension arms. These are easily interchangeable for a variety of different measuring operations.

Description: Direct-measuring Type LT-840 Xactemp is a high internal resistance type instrument. Automatic cold end compensation is standard.

Source: Announcement of the Claud S. Gordon Company, Dept. CP, 3000 S. Wallace St., Chicago 20, Ill. . . . or for more information check CP 5496 on handy form, pages 2 and 3.

**Recorder, controller catalog
shows complete line**

Well illustrated 36-page catalog covers line of electronic recorders and controllers. Partial list of standard recorder calibrations includes more than 200 scales. Several control systems are outlined. Descriptive material deals with the potentiometer operating principle. Publication also illustrates and describes accessory equipment used with these instruments.

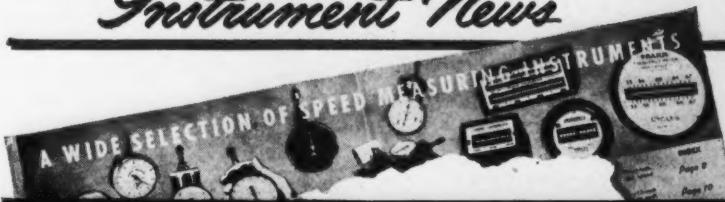
Catalog 15-15 is issued by Minneapolis-Honeywell Regulator Co., Industrial Div., Station 40, Dept. CP, Wayne and Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 5497 on handy form, pages 2 and 3.



Shown attached to general-purpose pyrometer is a rigid arm extension for measuring temps up to 800°F

BIDDLE

Instrument News



MORE COST SAVERS FOR CHEMICAL PROCESSING

Newest Biddle Bulletins Help You Select Speed Measuring Instruments

Frahm® Resonant Reed Tachometers

Jagabi® Centrifugal Tachometers

Jagabi Chronometric Speed Indicators and Tachoscopes

Bulletin 35-CP contains a time-saving selection chart that enables you to pick the best speed measuring instrument for your specific needs. All Frahm and Jagabi instruments are described in detail. Other pages are devoted to accessories and Biddle's reliable repair services.

Bulletin 31-CP covers the Frahm principle of measuring speed by the natural phenomenon of resonance. Frahm Resonant Reed Tachometers work by simply touching the instrument to any part of a rotating machine or by permanent mounting. They are available in various shapes and sizes from miniature tool kit size to large panel mounted sizes. Ranges from 900 to 100,000 rpm. (Frahm Frequency Meters are also described.)

Send convenient coupon today for your copies of these informative Bulletins.



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Bulletin 35-CP

Bulletin 31-CP

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PHILADELPHIA 7, PA.

ELECTRICAL TESTING • SPEED MEASURING INSTRUMENTS • LABORATORY & SCIENTIFIC EQUIPMENT

When inquiring check CP 5498 on handy form, pgs. 2-3

SIMPLER FLOW MEASUREMENT

in the palm
of your hand

NEW! MERCURY-LESS!

FOXBORO
DIFFERENTIAL PRESSURE CELL

Simplify troublesome flow problems . . . especially where corrosion is a factor or the use of mercury is objectionable. This unique flow measuring device

OUTSTANDING FEATURES

- Uses no mercury
- Steel or Stainless Steel Construction
- Zero Displacement
- Easily calibrated
- Weighs only 20 pounds
- Ranges: 25" to 800" H₂O

WRITE FOR BULLETIN 420. The Foxboro Company,
1907 Neponset Avenue, Foxboro, Mass., U.S.A.

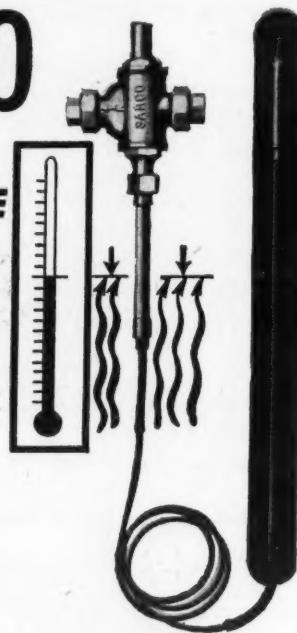
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ACCURATE
FLOW MEASUREMENT

When inquiring check CP 5499 on handy form, pgs. 2-3

SARCO ROOM TEMPERATURE REGULATORS

Self-operated, liquid expansion type control. No electricity or compressed air needed. Used for room temperatures, brine coils, dryers, ovens and ducts of all types. Temperatures 0° to 300°F. Cat. No. 600.



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IMPROVES PRODUCT QUALITY AND OUTPUT

When inquiring check CP 5500 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

For measuring, comparing light intensities . . .

photomultiplier microphotometer indicates percent transmission, density, photocurrent microamperes

Uses: For precise measuring and comparison of light intensities from 20 micro-microlumens to 20 lumens at selected wavelengths. Scope of application covers film densitometry, colorimetry, turbidimetry, fluorimetry, light scattering, scintillation efficiency of phosphors, specular and diffuse reflectivity, opacity, glossimetry, luminescence, etc.

Features: Meter indicates percent transmission, density, and photocurrent microamperes directly without correction factors.

Description: Instrument consists essentially of 1) photomultiplier microphotometer which is supplied with a 5' cord for attachment to current supply, a 5' cord with photomultiplier tube socket, and one photomultiplier tube; and 2) a light-tight housing which accommodates the multiplier tube in its socket and which is fitted with a filter holder.



Photomultiplier microphotometer

Decade range switch provides direct readings for the intensities from 20 micro-microlumens to 20 lumens, densities from 0 to 9, and phototube currents from 10^{-5} to 10^{-11} amperes. This range can be extended with neutral filters. Full-scale deflections of the meter are given with photomultiplier currents of 10, 1, 0.1, and 0.01 microamperes. The latter value corresponds to a sensitivity of 20 micro-microlumens per meter division with photomultiplier tube detector. Provision is made for an additional position on the range switch for 0.001 microampere full scale where this amplification is usable.

Optical accessories such as transmission or interference type filters, polaroids, depolarizers, apertures, slits, etc., may be inserted in the filter holder for measurement at selected wavelengths.

Instrument has an outlet on panel that provides 10 mv at 100 microamperes for the operation of any commercial type recorder.

Source: Photomultiplier microphotometer is a product of the American Instrument Company, Dept. CP, 8030-8050 Georgia Ave., Silver Spring, Md. . . . or for more information check CP 5501 on handy form, pages 2 & 3.

Rotation converted to current for tachometer measurement

Two-page technical data sheet considers series of tachometer indicators and heads. Instruments are 3-range, single head, fixed type for applications where a particularly wide range of speed measurement is desired. Features include sustained accuracy of 1% of full scale; flexibility of calibration; direct coupling to any speed — heads permit direct measurements from any speed between $\frac{1}{2}$ and 100,000 rpm without any speed-changing drive; rugged con-

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ARE WORTH
MEASURING"

with a

LIQUIDOMETER

Tank
Gauge

- FOR GAUGING LIQUIDS OF ALL KINDS
- 100% AUTOMATIC
- APPROVED BY UNDERWRITERS' LABORATORIES

WRITE FOR COMPLETE DETAILS

THE LIQUIDOMETER CORP.
38-18 SKILLMAN AVE., LONG ISLAND CITY, N.Y.

When inquiring check CP 5502 on handy form, pgs. 2-3

Send for BULLETIN 194-SA

CAMBRIDGE SURFACE PYROMETERS

In many industries close temperature tolerances demand continuous, accurate knowledge of the temperature of working surfaces. To meet these requirements, Cambridge Surface Pyrometers have proved indispensable thousands of plants throughout the world.

Almost instantaneous in action, these accurate thermometers indicate the temperature of flat and curved surfaces with surprising accuracy. They are used to measure the surface temperature of mold cavities, laboratory surfaces of almost any material. They are also used to measure the sub-surface temperature of materials in a plastic or semi-plastic state.

Cambridge Surface Pyrometers incorporate numerous improvements in design and construction developed through years of experience. They are rugged and tools precision laboratory accuracy in light weight construction. Thousands are now in use throughout the service after 30 years of constant use, improving quality and cutting costs.

CAMBRIDGE INSTRUMENT COMPANY, INC.
Pioneer Manufacturers of Precision Instruments
Grand Central Terminal
New York 17, N.Y.

Cambridge Surface Pyrometers are light weight, portable instruments — accurate but rugged — for measuring temperature of mold cavities and flat surfaces, still or moving rolls, and within-the-mass temperature of materials in a plastic or semi-plastic state. Write for Bulletin 194-SA; 33 illustrations, many applications.

CAMBRIDGE INSTRUMENT CO., INC.

3706 Grand Central Terminal, New York 17

PIONEER MANUFACTURERS OF PRECISION INSTRUMENTS

When inquiring check CP 5503 on handy form, pgs. 2-3

CHEMICAL PROCESSING

DEPENDABLE TEMPERATURE CONTROL TO 1000° F



Thermohm
electric
resistance
thermometer
used with
Electromax
Controller

This Electromax Controller provides modern electronic regulation for temperatures of ovens, furnaces, kettles, tanks, etc. Type of regulation can be either on-off or proportional, yet the instrument is the acme of dependable simplicity. Being a resistance bridge, it needs no standard cell; has only one moving part; is not affected by tremors or vibration; usually needs no attention for months at a time. For details, write us at our nearest office or at 4995 Stenton Ave., Phila. 44, Pa.

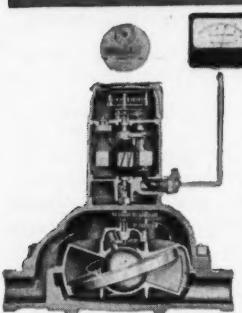


LEEDS & NORTHRUP COMPANY, 4995 STENTON AVE., PHILA., PA.
LEEDS & NORTHRUP

MEASURING INSTRUMENTS - TELEMETERS - AUTOMATIC CONTROLS - MEAT-TREATING FURNACES

Jrl Ad ND47(1c)
When inquiring check CP 5504 on handy form, pgs. 2-3

Remote indication and control of liquid flow



Hays VERIFLOW meter accurately measures, indicates, and totals the flow of corrosive and hard-to-meter liquids without using weigh tanks, orifice plates, or gage sticks.

With the Hays VERITROL you simply set a knob at the rate of flow desired . . . then, the VERITROL controls the flow of liquid at that set-rate.

for corrosive liquids

Acetic Acid, Aluminum Potassium Sulphate, Ammonia, Calcium Compounds, Carbolic Acid, Formaldehyde, Fruit and Vegetable Juices, Hydrogen Peroxide, Phosphoric Acid, Potassium Hydroxide, Sodium Compounds, Sulphuric Acid (concentrated), Stearic Acid, and many others

Send for a complete description of Hays Veriflow Meter and Veritrol.
Bulletin 48-766

THE HAYS CORPORATION
MICHIGAN CITY 12, INDIANA

When inquiring check CP 5505 on handy form, pgs. 2-3

JULY, 1951

PROCESS INSTRUMENTATION

struction; ability to separate indicator and head by over 1000' without materially affecting calibration; and ability to withstand the selection of wrong range or other causes of overspeeding.

Indicator can be mounted semi-flush in a panel, or bracket mounted by screw holes in its base. Indicators are not complete tachometers in themselves, requiring the addition of tachometer heads to convert rotation to a measurable electric current. Indicators normally operate from 115 vac, but can be supplied for operation on 115 vdc, 220 vdc, or 220 vac as required. No limited life components are used in indicator construction; it can be left on whether actually in use or not.

Complete details and illustrations of indicators and brief descriptions of heads are contained in Technical Data Sheet 42P, pages 1 & 2, issued by Metron Instrument Company, Dept. CP, 432 Lincoln St., Denver 9, Colo. When inquiring specify CP 5506 on handy form, pages 2 and 3.

For high speed recording of practically any DC signal . . .

suitable for use with pyrometers, pressure and force devices, host of other DC-producing units

Uses: Recorder is adaptable to the measurement of practically any DC signal — suitable in conjunction with thermocouples, radiamatic pyrometers and pressure and force transducers, plus a host of other devices capable of resolving different variables into DC signals. Spectrographic and other analyses, rocket engine testing, and determining instantaneous rates of flow are specialized examples.

Features: Operating characteristics of the High Speed Electronik recorder — accuracy: $\frac{3}{8}\%$ of span (over 12 mv), 0.045 mv (under 12 mv). . . dead zone: 0.14% of span (over 17 mv), 0.024 mv (under 17 mv) . . . nominal speed: full scale in one second maximum . . . chart speeds: 1, 2, 3, and 4" / sec (change gears and special re-roll motor provided) or any standard chart speed (120, 240, 360, and 480"/hr) . . . standardization: pushbutton. . . and power supply: 115 v, 60 cps.

Description: Recorder employs the Brown Electronik continuous balance method of pen actuation in which essentially 4 elements are required to evaluate the measured variable. These comprise a measuring circuit, a converter, an amplifier, and a balancing motor.

Source: Development of the Minneapolis-Honeywell Regulator Company, Brown Instruments Division, Dept. CP, Wayne & Windrim Aves., Philadelphia 44, Pa. . . or for more information check CP 5507 on handy form, pages 2 and 3.

For recording volts, amps

Recording voltmeters and ammeters are presented in 28-page bulletin. Special emphasis is placed on the moving-iron measuring mechanism. Complete information is given on ranges, uses, and specifications of the various models for permanent installation and portable use. In addition to photographs, bulletin is illustrated with reproductions of charts and actual chart records. Bulletin E1111 is issued by The Bristol Company, Dept. CP, Waterbury 20, Conn. When inquiring specify CP 5508 on handy form, pages 2 and 3.

PALMER

mercury actuated Dial Thermometers
now in three types to suit any requirements



1

Rigid Stem Dial Thermometer
Rigid stem tapered bulb, interchangeable with standard industrial thermometer separable socket.



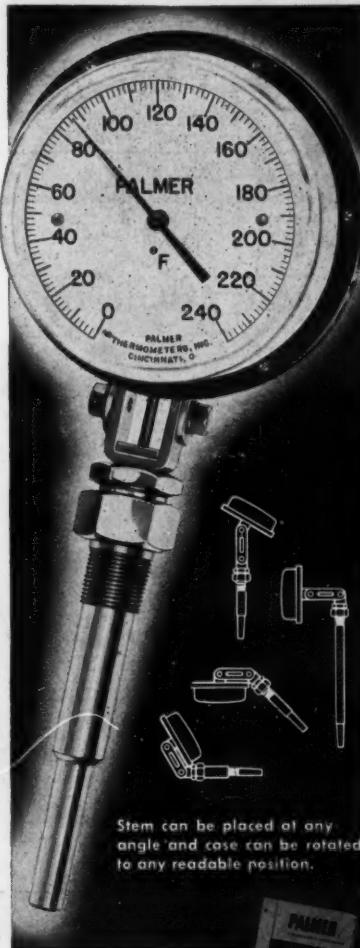
2

Wall Mounted Dial Thermometer
Wall mounted dial thermometer with flexible connecting arm. Case adjustable to easy reading position.



3

Flush Mounted Dial Thermometer
Flush mounted style for panel mounting with flexible connecting arm.



Stem can be placed at any angle and case can be rotated to any readable position.

SEND FOR THIS BULLETIN
For details on the New Palmer Dial Thermometer, please write for Palmer Bulletin 51-129.



for accuracy: Mercury actuated . . . Fully Compensated by Invar Compensation. Guaranteed Accurate 1 scale division.

for angularity: Can be adjusted to most readable position at any angle desired.

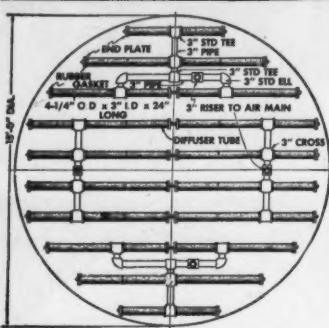
for readability: Bold Black Numbers . . . 11" of scale Reading Dial face can always be placed in easiest readable position.

for interchangeability: Always specify "PALMER" Separable sockets as they are interchangeable for Dial or Industrial type Thermometers.

PALMER THERMOMETERS, INC.
Mfrs. of Industrial Laboratory &
Recording and Dial Thermometers
2525 Norwood Ave., Cincinnati 12, O

When inquiring check CP 5509 on handy form, pgs. 2-3

for uniform gas bubble diffusion and absorption in fermentation or chemical processes



This grid, placed at the bottom of a circular tank, is typical of diffusers used for fermentation or chemical processes which involve straight gas absorption.

Porous Media by

CARBORUNDUM

Trade Mark

The Carborundum Company, Perth Amboy, N. J.

Dept. S-71, Refractories Division

"Carborundum" and "Aloxite" are registered trademarks which indicate manufacture by The Carborundum Company.

When inquiring check CP 5510 on handy form, pgs. 2-3

ALOXITE porous diffusers

In practically any gas diffusion process (from dissolving volatiles with steam bubbles, to growing bacteria in oxygen bubbles) you'll get optimum diffusion and absorption by using ALOXITE aluminum oxide porous plates or tubes.

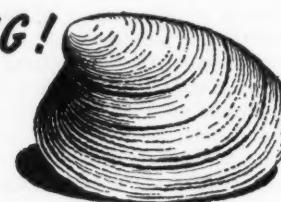
The highly uniform grain structure of ALOXITE material means you always get uniform, small bubble diffusion. And the glass-like ceramic bond which coats each grain presents a smooth, low-resistance surface that minimizes pressure loss or clogging.

ALOXITE diffusers are also inherently resistant to corrosion and can be safely used at working temperatures as high as 900°C. They are rugged enough to withstand repeated handlings. Various shapes are available for use in a wide range of equipment design.

YOU'LL WANT OUR POPULAR BOOKLET. It's the up-to-date reference source on porous media. Its 56 pages cover all fields of filtration and diffusion—including information on applications, specifications, designs, installation and operation. Write for your free copy today.



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BLAW-KNOX QUICK OPENING DOORS

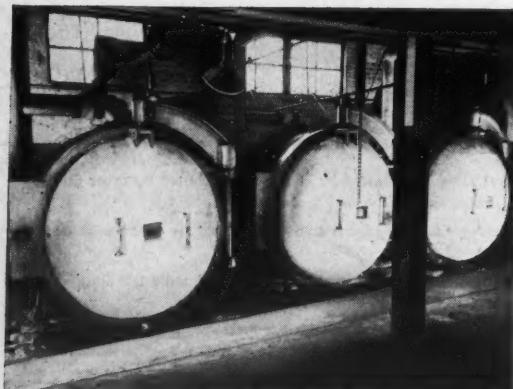
for curing chambers, vulcanizers, and similar equipment, are quick-tight-boltless. In diameters up to 10 ft., they may be used on pressures up to 250 psi. They are rim-locking; manually or mechanically operated.

This is only one of a long line of Blaw-Knox standard equipment items for the Process Industries. Write for Blaw-Knox Bulletin No. 2355.

PROCESS EQUIPMENT DEPARTMENT

BLAW-KNOX

DIVISION OF BLAW-KNOX COMPANY
2076 FARMERS BANK BUILDING, PITTSBURGH 22, PA.
Other Offices in Principal Cities



When inquiring check CP 5511 on handy form, pgs. 2-3

Briefs . . .

A message to young engineers: Continue Your Education

This paper presents a self-development plan for the young engineer during his first five years of practice. The author calls attention to the changing industrial scene. Cites two important points for a continuation of the engineer's education. Analyzes a proposed self-development plan and states the various items it should cover, such as engineering graduate study, business education, participation in professional activities. Emphasizes the responsibility of the employer in affording opportunity for study for employees. 3 pages. ("Mechanical Engineering," April 1951, page 309)

New heat transfer medium

Article describes a heating system where tetra cresyl silicate is used as the heat transfer medium. Provisions for its use are discussed. Schematic drawings illustrate essential parts of installation. Physical data of material are tabulated. 3 pages, 3 figures, 1 table. ("Heating, Piping and Air Conditioning," May 1951, page 100)

Cleaning heat exchangers

A common task in processing is the cleaning of heat exchangers. Article discusses the many methods used for this purpose and the kinds of exchangers to which the various methods may be applied. 4 pages, 9 photos, 1 diagram. ("Petroleum Processing," April 1951, page 370)

Stability of fuel oils in storage

It is known that some fuel oils, during storage, develop some filter and screen-plugging precipitates. These contain nitrogen. Certain nitrogen-containing compounds were added to fuel oil samples and effects were noted. Oils used and compounds added are identified. Results secured are tabulated or shown graphically. 4 pages, 4 tables, 5 figures. ("Industrial & Engineering Chemistry," April 1951, page 935)

CP glycerol by ion exchange

Authors present the results of a laboratory study on the application of ion exchange in the recovery of the splitting of fatty acids. Requirements for the raw glycerol solution fed to the ion exchange units are stated. Four ion exchange resins were selected to be used in treating the glycerol solution as produced in the Emery-Colgate process, and seven resins were selected for treating saponification crude glycerine. Analyses are tabulated for various stages of treatment and for the final product — CP glycerol. Economics of the process are discussed. 6 pages, 8 figures, 6 tables. ("Industrial and Engineering Chemistry," May 1951, page 1065)

Preparation and properties of urea-formaldehyde

The objectives of this laboratory investigation were to find the required reaction conditions for the production of a combination of urea and formaldehyde of low solubility and to develop a chemical method by which the nitrogen-supplying value could be determined. Methods for pre-

from contemporary publications

Here's a quick look at interesting articles, appearing in other publications . . . as selected by Technical Editor, H. McCormack

paring such a compound are described. The chemical evaluation, as a nitrogen supplier, is checked against plant tests. 4 pages, 6 figures, 5 tables. ("Industrial & Engineering Chemistry," April 1951, page 871)

Ion exchange in beet sugar manufacture

Author describes equipment and technique in one plant. States that three full scale plants are now operating. Considers some of the technical and economic problems which have arisen. Indicates those things, not yet accomplished, which would brighten the economic picture. 4 pages, 5 tables, 2 figures. ("Industrial & Engineering Chemistry," March 1951, page 615)

Composition of sugar beet liquors

Authors report results of the analyses of diffusion juice, thick juice, and molasses from four plants both at the beginning and at end of a campaign. Analyses were made for the purpose of evaluating customary juice purification processes. 3 pages, 4 tables. ("Industrial & Engineering Chemistry," March 1951, page 603)

External volume of ion exchange particles

The importance of knowing this volume is commented on. Definition of terms used is given. Source and preparation of the resins used are stated. Techniques used for external volume determinations are given, commented on, and compared. 3 pages, 2 figures, 3 tables. ("Analytical Chemistry," April 1951, page 620)

Pressure feeder for powdered coal, other finely divided solids

A technique being used in producing synthesis gas required feeding powdered coal under pressure into the gas producer. A feeder was developed that operated up to 150 psi. Equipment is shown in schematic drawing. Operating data, at 4 pressures, showing carrying capacity and other pertinent facts are tabulated. Other questions unanswered in this investigation are stated as a basis for extending the investigation. 6 pages, 6 figures, 4 tables. ("Industrial and Engineering Chemistry," May 1951, page 1204)

Separation of rare earths by ion exchange procedures

Authors present the results of an experimental study on the separation of certain rare earths by means of an ion exchange resin. It was found that, under carefully controlled operating conditions, the rare earths of the cerium group were elutriated in the order of their molecular weights, the higher first. Equipment and operating techniques are fully described. Results are given regarding certain separations. 9 pages, 4 figures. ("Canadian Journal of Chemistry," May 1951, page 363)

Speed reduction problem?

Is it Ratio? Space? Shock? Overload?

No one speed reducer solves every reduction problem.
That's Why LINK-BELT
Builds All 3

FOR the right speed reducer engineered to match your exact conditions, your best bet is Link-Belt. Link-Belt builds all three—Helical, Herringbone and Worm Gear Drives. When a Link-Belt power transmission engineer analyzes your problem, he isn't tempted to fit his recommendation to a limited line.

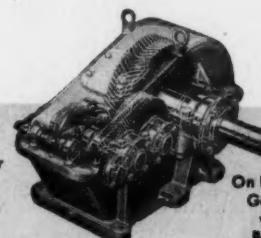
You can also be sure that the Link-Belt unit recommended is engineered and built for tough operating conditions. And efficiency in power transmission is matched by flexibility in application!



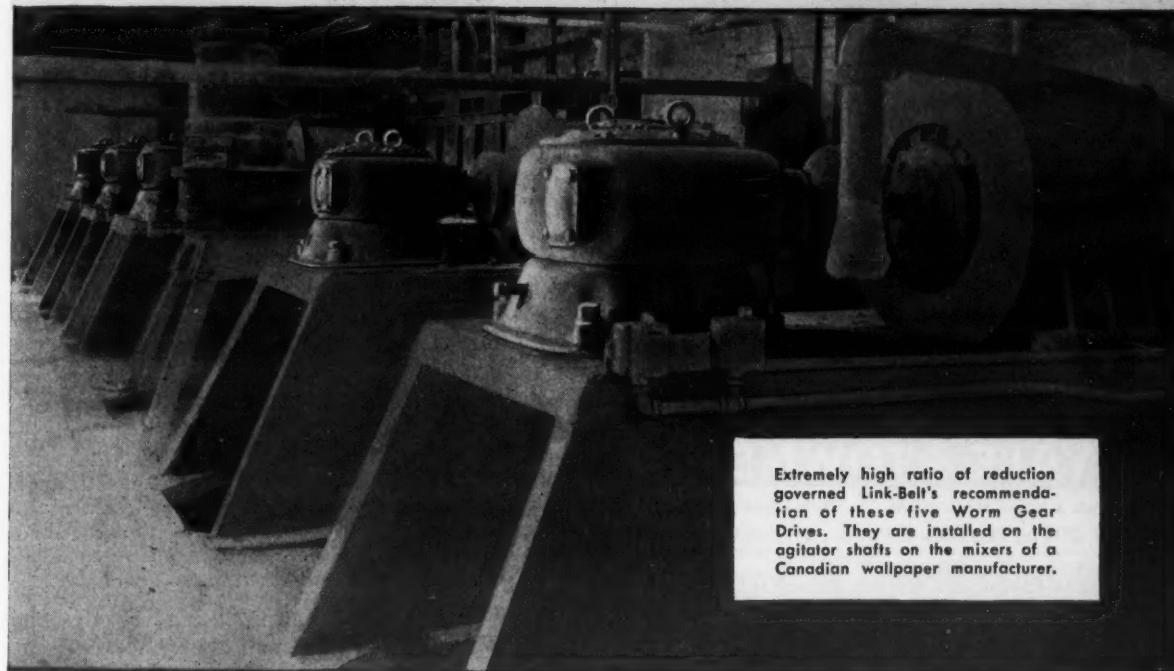
On Worm Gear
Drives
write for
Book 2324



On Gearmotor
and Helical
Gear Drives
write for
Book 2247



On Herringbone
Gear Drives
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Book 2419



Extremely high ratio of reduction governed Link-Belt's recommendation of these five Worm Gear Drives. They are installed on the agitator shafts on the mixers of a Canadian wallpaper manufacturer.

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LINK-BELT COMPANY: Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices, Factory Branch Stores and Distributors in Principal Cities.

When inquiring check CP 5512 on handy form, pgs. 2-3

MOBILIZE YOUR PLANT

for maximum production now!



**Get the most from every machine
...every hour...every dollar with
YALE INDUSTRIAL TRUCKS**

These Yale fork lift trucks will help gear your plant for all-out efficiency...stack materials nearly 16' high...put wasted aisle and overhead space to work...eliminate costly, slow, back-breaking hand lifting.

They stay on the job, too...keep production lines well fed and shipments rolling. For example, the Yale electric truck with magnetic contactor controls cuts "down time" to a minimum. The Yale gas truck with fluid drive increases clutch life and reduces maintenance costs. And these are only two of many Yale exclusives!

Let Yale help you mobilize your plant for greater production at lower unit cost now! Send coupon today.

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When inquiring check CP 5513 on handy form, pgs. 2-3

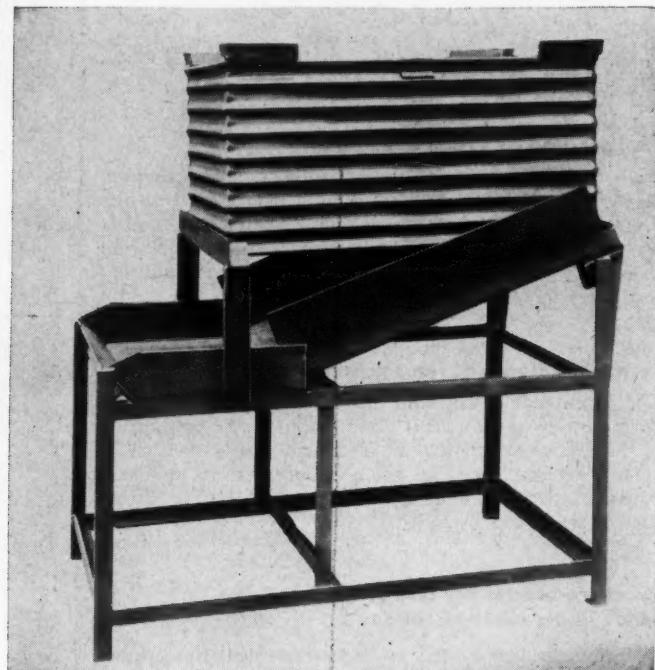
Materials Flow from Dump-bottom Boxes with Precise Control of Spillage



Truck attachment raises dump-bottom box to discharge load at desired height

When placed on stand, dump-bottom of box descends, forming discharge chute as truck forks are lowered

Attachment for any hydraulic fork truck dumps boxes or places them on positioning stand



As may be noted in the illustration showing box completely open, discharge point does not change throughout dumping cycle. This is an important factor in simplifying operations.

Constant supply of parts, or material, at convenient level reduces worker fatigue and non-productive time of machines, and eliminates delays in production operations. Reservoir tray integral with positioning stand always retains supply until empty box can be replaced with a full one.

Description: System embodies special dump bottom boxes, hydraulic dumping attachment which fits practically any hydraulically operated fork truck, and positioning stand. It was developed in cooperation with Clark Equipment Company engineers. In service, truck picks up box from any one of three sides. Bale on box is engaged by lift truck dumping hooks. Hydraulic

Features: Dumping is actuated by means of a hydraulic mechanism that can be installed on almost any hydraulically operated fork truck. Drop-bottom design of box, and manner in which it is raised by truck, permits operator to direct flow of material and narrows it to a very small spillage area.

Boxes can be fork-lifted from any one of three sides. They are of rugged construction with large half-round corrugations, square corners and flat-top triangular head.

action raises the auxiliary mast, lifting box away from the forks and permitting the hinged bottom to open. Boxes are made in three sizes: 24 x 33 x 48"; 12 x 33 x 48"; and 18 x 33 x 36". All have 4" underclearance.

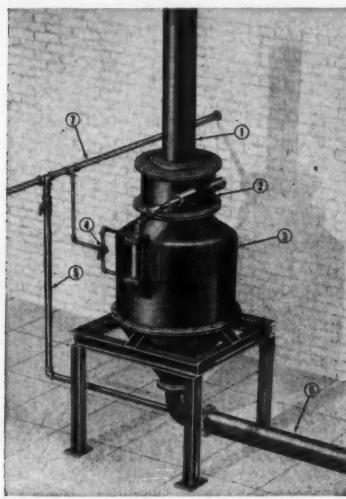
Source: "Controlled Dumping" system is a development of The Union Metal Mfg. Co., Dept. CP, Canton 5, Ohio . . . or for more information check CP 5514 on handy form, pages 2 and 3.

Air activation, fluidizing assure rapid flow of bulk material through pipe . . .

moves granular, lumpy mixtures through any elevation at no limit in distances

Uses: Transporting granulated, lumpy and all bulk, dry materials to remote delivery points. Handles alum, ammonium nitrate, ash, asbestos, bauxite, borax, soda ash, salt, etc.

Features: Uses either low or high pressure air. Systems may be easily installed. Lines may go through and around existing obstructions. No moving parts are involved, reducing maintenance to a minimum. Material handled is fully enclosed from loading point to point of discharge for dustless operation. Entire system controlled by one operator. Rapid handling of heavy tonnages at low cost per ton. Conveyor is self-cleaning; thus, there is no contamination from previous loads.



Conveyor pressure vessel, air material inlets and outlets

Description: Handles ounces or tons through small pipe diameter by pressures from 10 to 100 psi. Pipe sizes are determined by the capacities required and distances material is to be conveyed. Air activation and fluidizing of the material is accomplished by admitting air into pressure vessel. This creates a fluid mixture of air and solids. The material immediately begins to flow through the pipe line just as a fluid would flow under pressure. Pressure without this aeration would not be adequate and would cause packing of materials that have a tendency toward caking in a pipe line.

Illustration shows sequence of operation. 1) Material supplied from such sources as overhead bins or by manual or mechanical means. 2) Gate operation is manually, automatically or remotely controlled by compressed air or electric motor. 3) Pressure vessel (Flo-veyor) can be built to accommodate different capacities per hour. 4) Hand operated or remote control operated air cylinder closes gate and stops flow of material when pressure vessel is filled. 5) High pressure or low pressure air is introduced at points necessary to aerate and fluidize material. 6) Pipe sizes provided to requirements. 7) Air is supplied from low or high pressure compressors.

Source: Flo-veyor conveyors are built by The Brady Conveyor Corp., Dept. CP, 20 W. Jackson Blvd., Chicago, Ill. . . or for more information check CP 5515 on handy form, pages 2 and 3.



Move Any Industrial Fluid Any Distance, at Any Temperature!

"Free yourself from the limitations of old-fashioned pipe heating methods with Thermal Electric Systems!"

"With this all-electric transport system, it no longer matters how hot you must keep the fluid, how far you must move it, nor how exact your temperature control must be."

"Even the most acutely temperature-sensitive fluids are safely handled. Passing low-voltage current through the pipe that carries the fluid spreads even, low-density heat over the entire system, eliminating hotspots. Thermostatic controls won't let temperature vary more than 2°F."

"Different ambient temperatures are no longer a problem, as fluid temperature will not vary. Systems in tandem will bring fluid from cold exteriors to hot indoors with no temperature change."

"If you have a tough heating problem with any fluid, take a good hard look at versatile Thermal Electric Industrial Systems for viscous fluid transport!"

Fluid Systems Inc. are specialty engineers in the handling of industrial viscous fluids. We are available as special aides to consulting or staff engineers in designing transport systems for any fluid.

YEARS OF PERFORMANCE

American Can Company
Paraffin: 6,889' at 160°F.

Kentile Inc.
Resin: 1,515' at 400°F.

Minnesota Mining & Mfg. Co.
Phenol: 235' at 120°F.

Owens-Corning Fiberglas Corp.
Asphalt: 2,528' at 160°F.

Peter Cailler Kohler
Swiss Chocolate Company
Chocolate: 1,207' at 100°F.

The Wm. J. Wrigley Jr. Co.
Glucose: 755' at 180°F.

<p style="text-align: right;">PAT. NO. 2,224,403</p> <p>Thermal Electric</p> <p>Fluid Systems Inc., 1881 Dixwell Ave., New Haven 14, Conn.</p> <p>Please send me "Simplified Industrial Fluid Transport Cuts Costs" plus customer list.</p> <p>Name _____ Position _____</p> <p>Firm _____</p> <p>Address _____</p> <p>City _____ State _____</p>	
--	--

When inquiring check CP 5516 on handy form, pgs. 2-3

A Tasty Product

A Weighty Problem

A Buschman Solution



BUSCHMAN
Conveyor System
Moves 500,000 lbs.
of Margarine daily...

A large margarine manufacturer, faced with growing demand found sales outdistancing deliveries. Added production from scattered units in three buildings at different levels hampered production flow. **BUSCHMAN** Conveyors solved the problem. Standard sections were supplied to provide a made-to-order conveyor system of ingenious design. Production and delivery demands were met, and improved product handling made possible advanced inventory control. Let **BUSCHMAN** help you solve similar problems. Write Today.

PRODUCE MORE...FOR LESS
on
Buschman
Conveyors

THE E. W. BUSCHMAN CO., INC.
Spring Grove & Clifton
CINCINNATI 32, OHIO

When inquiring check CP 5517 on handy form, pgs. 2-3

MATERIAL HANDLING

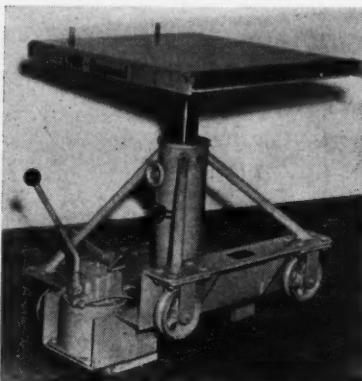
Handling curing molds simplified by modifying hydraulic tables . . .

permits placing molds in presses at various levels

Uses: Handle hot, heavy curing molds in rubber processing plants. Suitable for similar loads up to 2,000 lb.

Features: Tables, such as that shown in illustration, were made to manufacturer's standard specifications with slight modifications to meet customer's special requirements. In order that molds can be placed in the presses at different levels, a 16" range of elevation is furnished. Top lowers to 28 inches and raises to 44 inches.

Description: Serving a battery of presses, each table has two offset grooved wheels which run on angle iron tracks. Tables have capacity of



Top lowers to 28", raises to 44"

2,000 lb. Heavy molds roll on the top over a single roller mounted on the front edge of the top. Two stops at the back prevent the mold from sliding off that side.

Top will turn 360° or can be locked in one fixed position. Elevation is actuated by two-speed hand pump provided.

Source: Hydraulic elevating tables are built by Lyon-Raymond Corp., Dept. CP, 63-82 Madison St., Greene, N. Y. . . or for more information check CP 5518 on handy form, pages 2 and 3.

Mobile ladders made safe

Six-page, two-color catalog describes all-steel mobile ladders which do not skid or roll when loaded. "Safety-Step Ladders" is issued by Ballymore Co., Dept. CP, Wayne, Pa. When inquiring specify CP 5519 on handy form, pages 2 and 3.

Let "SCREW CONVEYOR"

Supply ALL your Conveying Needs



HELILOCID CONVEYOR
Made in all standard sizes. Also in special diameters and gauges of flight.



SECTIONAL FLIGHT
Self-supporting flights with uniform pitch and diameter in all sizes. Also ribbon, cut-flight, etc., with or without paddles.



CONVEYOR BOXES
With exclusive Hammond "U" edging and cover clamps. Delivers highest possible capacities of grain and granular materials.



FAMOUS NU-HY BUCKET



END THRUSTS
Largest line of ball and roller bearing end thrusts with fabricated box ends.



BOX HANGERS
Efficient design that offers minimum resistance to flow of material.

... YOUR ASSURANCE OF THE FINEST!

The HAMMOND LINE
Screw Conveyor Corporation
699 HOFFMAN ST. HAMMOND, IND.
ENGINEERS MANUFACTURERS TRADE MARK REG. U. S. PAT. OFFICE

When inquiring check CP 5520 on handy form, pgs. 2-3

For ALL your BULK HANDLING NEEDS



- Cement Clinker • Gypsum Rock • Plaster Rock • Limestone
- Kainit • Manure • Magnesite
- Salts • Manganese • Muriate of Potash • Phosphate Rock • Potash • Pyrites • Super Phosphate • Sodium Nitrate • Sulphate of Ammonia • Ilmenite • Sulphur, Etc.

Use BLAW-KNOX Clamshell BUCKETS



There's a size and type of Blaw-Knox Bucket for every requirement. Get complete information, construction details and specifications from Bulletin 2236.

BLAW-KNOX Buckets are built especially for low cost handling of bulk materials in chemical and fertilizer plants. Tight fitting lips of cast chrome-nickel-molybdenum alloy steel prevent contaminating leakage and resist abrasion to insure long, dependable service.

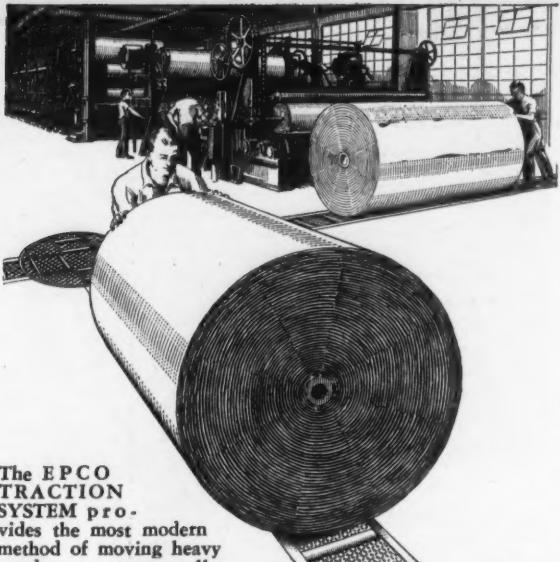
BLAW-KNOX DIVISION
of Blaw-Knox Company
2076 Farmers Bank Building
Pittsburgh 22, Pa.

BLAW-KNOX

FOR CHEMICAL AND FERTILIZER PLANTS

CLAMSHELL BUCKETS

When inquiring check CP 5521 on handy form, pgs. 2-3



The EPCO TRACTION SYSTEM provides the most modern method of moving heavy goods — paper rolls, drums and vats of chemicals. Epcos is now used in more than 100 paper mills and corrugated box plants. EPCO ball-bearing Trackage never requires more than 4" foundation and may be installed in any type of flooring. Hand and power trucks can cross without causing damage to trackage. EPCO system keeps the load on the floor, avoids accidents, saves man hours; replaces caster wheel dollies and eliminates damage to floors.



Let us help plan your layout.
ENGINEERING PRODUCTS CO., Inc.
126 South Michigan Ave., Chicago 3, Ill.

When inquiring check CP 5522 on handy form, pgs. 2-3

"Weld-Bilt" EQUIPMENT GIVES YOU LONGER SERVICE IN LABOR-SAVING MATERIALS HANDLING

You can SEE the greater strength and durability in WELD-BILT Equipment . . . in heavier arc-welded construction, in sturdier operating parts, in many innovations that assure easier, friction-free operation. Every piece of "Weld-Bilt" equipment is designed to save operator fatigue, protect product and save money both on original cost and maintenance expense.

You can easily PROVE "Weld-Bilt's" superiority through many more years of actual performance in hundreds of plants all over the Nation. It means your lowest possible investment-per-year in time and labor saving.

"Weld-Bilt" PRODUCTS
WEST BEND EQUIPMENT CORP., WEST BEND, WISCONSIN

Write or wire for prices today . . . or for engineering assistance on your handling problems or plans.

WEST BEND EQUIPMENT CORP.
MATERIALS HANDLING ENGINEERS
319 Water Street, West Bend, Wisconsin

When inquiring check CP 5523 on handy form, pgs. 2-3

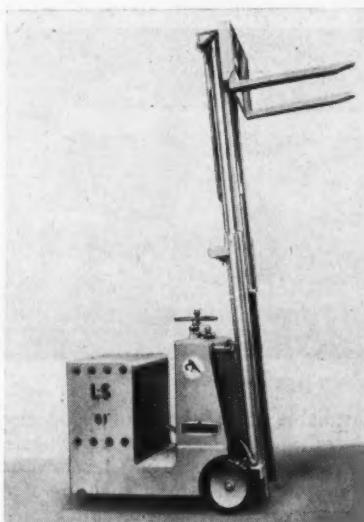
MATERIAL HANDLING

Right angle stacking of 40" pallets easy for 1½ ton truck . . .

visibility, step-through corridor for safety

Uses: Designed especially for warehouse operations and other service where minimum operating space is one of the prime requisites. Can be used to handle loads up to 3,000 lb when maximum length is 48", and up to 4,000 lb when maximum length is 32".

Features: Good visibility with all types of loads. Operator can conveniently drive truck in reverse when



Fork elevation is 127"

handling bulky loads. Step-through corridor permits operator to step off truck from either side. Central control stand-up design contributes to safety of operator and others working in the adjacent area. All vital parts can be inspected or serviced from top side of truck.

Description: Heavy-duty high speed unit with full free-lift mast designed to provide 127" of fork elevation and 65 1/4" free lift with 83" collapsed height. Overall length is 105" and wheelbase 47". Traction speed is approximately 5 mph. Controller for 3 speeds forward and 3 reverse is drum type with readily replaceable, self-cleaning silver alloy contacts.

Battery is standard 11 cell, 17 plate, lead-acid only.

Source: Spacemaster 61 truck is built by Lewis-Shepard Products, Inc., Dept. CP, 191 Walnut St., Watertown, Mass. . . or for more information check CP 5524 on handy form, pages 2 and 3.

If your Product is hard-to-pack . . . and you need to guard against Change in moisture content Contamination . . . Sifting

Undesirable odors

Insect infestation

Loss of aroma

Loss from snagging

and tearing . . .



Then you need
Bemis

Waterproof LAMINATED-TEXTILE Bags

The Strongest Shipping Bags Made

ASK YOUR BEMIS MAN FOR THE COMPLETE WATERPROOF BAG STORY

Bemis

111 N. 4th St., Box 40, St. Louis 2, Mo.



MAYBE YOU NEED THESE, TOO

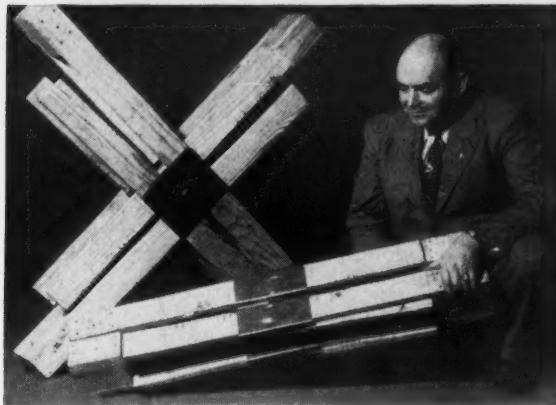
If you don't require the exceptional protection of Bemis Waterproof Bags, Bemis Multi-wall, Cotton or Burlap Bags are your best bet.



Whatever kind of bag you need, we make it!

When inquiring check CP 5525 on handy form, pgs. 2-3

MATERIAL HANDLING



Extended and collapsed positions of Spring A-C pallet

for light duty are 1400 and 2000 lb, respectively. When bulky loads having low rigidity are handled, a layer of cardboard or light framework is reported to convert the pallet satisfactorily.

Source: "Spring A-C" pallet is manufactured by Spring Wood Products, Inc., Dept. CP, Austin Road, Geneva, Ohio . . . or for more information check CP 5530 on handy form, pages 2 and 3.

Convert walking model tractor to rider-type . . .

combine constant maneuverability and labor saving features in one compact unit

Uses: For towing trailer trains and other applications requiring up to 20,000 lb rolling capacity and 700 lb drawbar pull. Will also push.

Features: Operator rides instead of walking as has been the case with previous models in this line of tractors. Front wheel drive gives mobility.

Description: All movement of this compact battery-



Rider-type front-wheel drive tractor

operated tractor is finger-tip controlled. Power is automatically shut-off when brakes are applied.

Source: Rider-type Tractor Ox is built by Barrett-Cravens Co., Dept. CP, 4605 So. Western Ave., Chicago 9, Ill. . . or for more information check CP 5531 on handy form, pages 2 and 3.

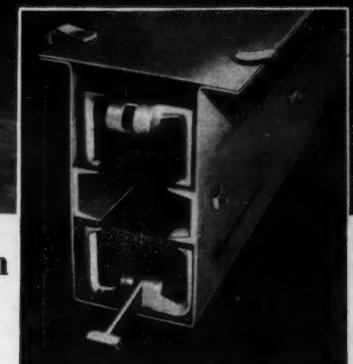
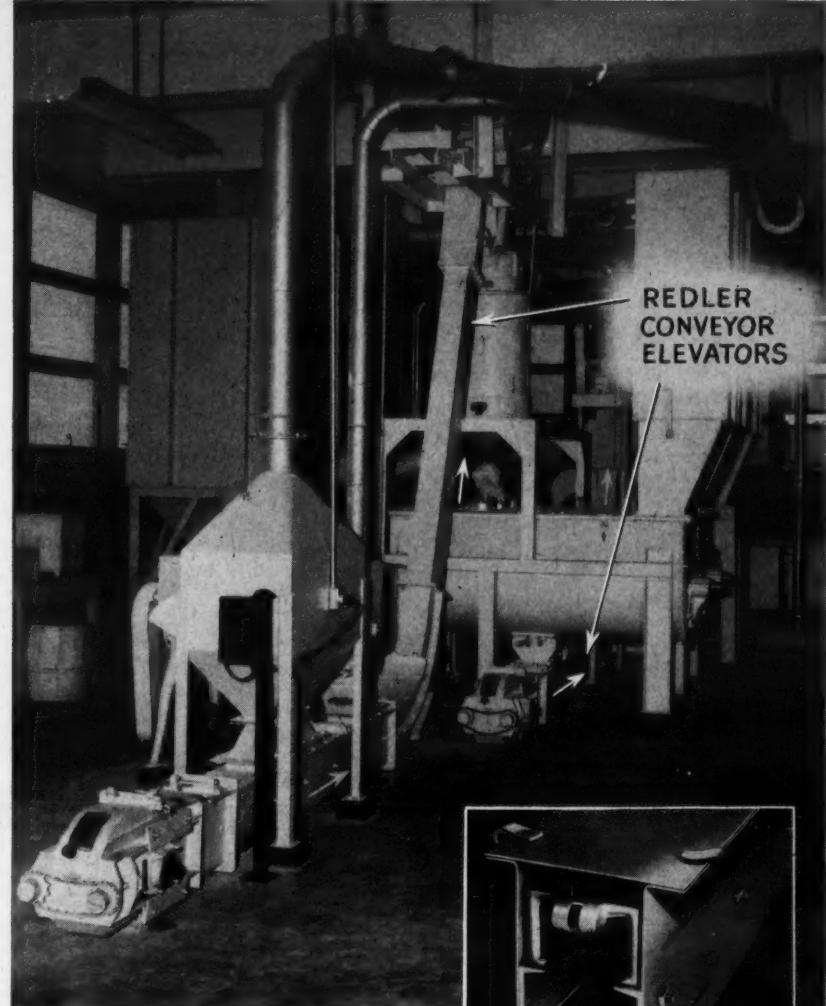
4

Powder Handling Problems that found One Answer

...a REDLER Conveyor-Elevator System

The materials handled in bulk at this plant are talc, face powder and talcum products which imposed these special requirements: Bulk handling equipment to fit limited space—Dust-free conveying—Protection against contamination—Lowest handling costs. A REDLER installation, that fits neatly and snugly, and completely encloses the moving material was the perfect answer to all requirements.

Because of their great flexibility in design and adaptability to space, REDLER Conveyor Systems settle many such problems for plants of widely differing operations. Designed and built by S-A engineers, they provide fast, convenient handling for many materials with maximum safety and economy. S-A engineers will gladly talk over your requirements and offer helpful suggestions based on 50 years experience in conveying bulk materials.



Cross-section of standard Redler casing shows material moving in lower tier flights returning, circuit-fashion, in upper.

CRUSELLAS Y COMPAÑIA, S. A.
Havana, Cuba

Two REDLER Conveyor-Elevators handle the full output—each serving as a feeder, conveyor and elevator in a single unit. Lower feed section (foreground of large photo) receives material from a feeder and elevates it for discharge to sifter. Sifted materials discharge into mixers from which they are drawn off by a second REDLER Conveyor-Elevator—then discharged to pulverizer and filled into batch boxes for delivery to packing operations. The dust-tight, enclosed REDLER casing keeps materials clean, safe and pure against contamination and avoids spillage.

1901-1951
50 years experience with bulk handling
STEPHEN S-A ADAMSON
11 Ridgeway Avenue, Aurora, Illinois MFG. CO. Los Angeles, Calif. • Belleville, Ontario

DESIGNERS AND MANUFACTURERS OF ALL TYPES OF BULK MATERIALS HANDLING EQUIPMENT

When inquiring check CP 5532 on handy form, pgs. 2-3



mechanize your manpower

Take the shovel out of a man's hand and put him on the seat of a PAYLOADER. He'll show you how to lick rising costs, how to increase output and solve manpower shortages. Thousands of plants with bulk materials to handle have taken this step with highly gratifying results. And PAYLOADERS can do so many jobs that there is hardly any limit to their usefulness.

Every PAYLOADER is a complete Hough-built tractor-shovel specifically designed with multiple reverse speeds and other features that insure fast, low-cost bulk material handling. There are several sizes from the 12 cu. ft. Model HA shown, up to 1½ cu. yd. bucket capacity. They are also available in front-wheel, rear-wheel and four-wheel-drive models.

Every PAYLOADER is backed by 30 years of material handling equipment manufacture and a Hough Distributor with complete parts and service facilities. The Frank G. Hough Co., 744 Sunnyside Avenue, Libertyville, Illinois,

On These Jobs

- Unload box cars.
- Dig and carry fertilizers, chemicals, all loose materials.
- Transport and distribute materials from storage to process.
- Unload trucks.
- Load box cars.
- Feed conveyors, hoppers, baggers, elevators.
- Stockpile coal and all kinds of raw materials.
- Clean up gangways, aisles and other areas.
- Handle coal, coke, ashes, cinders.
- Carry bagged materials, bales, barrels.
- Maintain private roadways.
- Do cranework — haul, push.
- Remove snow.

HELP for your material handling problems is found in "Industrial Handling" the free Hough magazine. Catalog on any size PAYLOADER is available, without obligation.



PAYLOADER®

THE FRANK G. HOUGH CO. • Since 1920



When inquiring check CP 5533 on handy form, pgs. 2-3

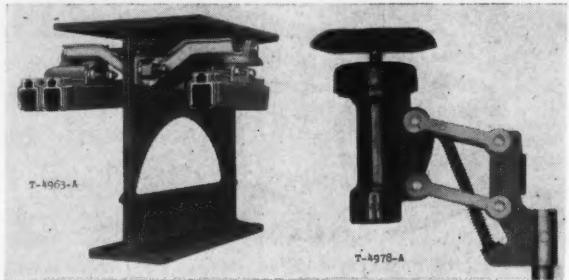
MATERIAL HANDLING

Safety is basis of system for electrification of overhead cranes . . .

no dangers from exposed conductor bars; graphite collector shoes out-live wheel type

Uses: Safety electrification for overhead crane and tramrail equipment. Arrangement may be applied to all of maker's new tramrail systems, as well as a replacement on open-bar electrification. May be installed on many hand powered systems replaced by motor powered hoists, carriers, or cranes.

Features: Designed in anticipation of a possible ruling in the near future by the National Electric Code,



(Left) I-beam fitted with 3 U-shaped, insulated conductor bars. (Right) One of the special graphite sliding collector shoes that makes contact with conductor

making it mandatory to have adequate protection of electrification on overhead materials handling equipment.

Description: Main component of the system — Saf-Powr-Bar — consists of inverted U-shaped conductor bars, inside of which operate sliding current collector shoes. Contact with the bars that would shock or injure personnel is prevented by an insulating plastic covering. Sliding current collector shoes contact 3 sides of the bar and operate on a pantographic principle. A diagonal spring provides upward pressure on the special graphite shoe, while a torsion spring with a plastic housing causes pressure to be applied on both sides of the conductor bar. Sliding shoe is reported to offer greater service life than collector wheels.

Source: Safety electrification is a development of the Cleveland Tramrail Division of the Cleveland Crane & Engineering Company, Dept. CP, Wickliffe, Ohio. . . or for more information check CP 5534 on handy form, pages 2 and 3.

Trucks' automatic acceleration, "no-kick-back" steering, add to operating ease, efficiency . . .

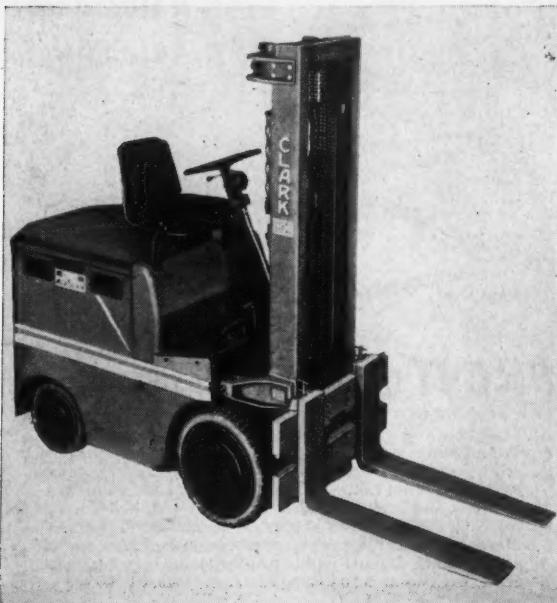
electric models in 4,000 and 5,000 lb capacities designed for maneuverability, easy maintenance

Uses: For loading, unloading and general handling operations to maximum limits of 4,000 and 5,000 lb.

Features: Fingertip control lever is mounted on steering column. This makes possible the selection of direction of travel and the engagement of the first point of power simultaneously. Automatic acceleration eliminates jerky movement. Shifts from one point of power to another are timed automatically in accordance with torque requirements.

Deadman brake, which is linked to driver's seat, oper-

MATERIAL HANDLING



Electric truck built in 4,000 and 5,000 lb models

ates off the drive shaft of the drive motor. Top cover of battery compartment is hinged at center to permit charging and servicing battery without removal from truck. Either, or both side louvres may be removed, making it a simple matter to slide battery out.

Description: Model 4024 has 4,000 lb capacity; overall length, less forks, 76 $\frac{3}{4}$ "; overall width, 41"; wheelbase, 44"; outside turning radius, 74"; minimum intersecting aisles, 66 $\frac{1}{2}$ "; service weight, less batteries, 5990 lb.

Model 5024 has a capacity of 5,000 lb. Overall length, less forks, is 78"; overall width, 41"; wheelbase, 48"; outside turning radius, 78"; minimum intersecting aisles, 68 $\frac{1}{4}$ "; service weight, less batteries, 6368 lb.

Standard equipment includes cushion tires and a cushion seat with backrest.

Source: Carloader electric fork-lift trucks are built by Clark Equipment Co., Industrial Truck Div., Dept. CP, Battle Creek, Mich. . . . or for more information, check CP 5535 on handy form, pages 2 and 3.

Application data given on special purpose trucks

Five 3-color, single-page sheets give application data including dimensions, turning radius, capacity, lift, travel speed, and braking for five truck models.

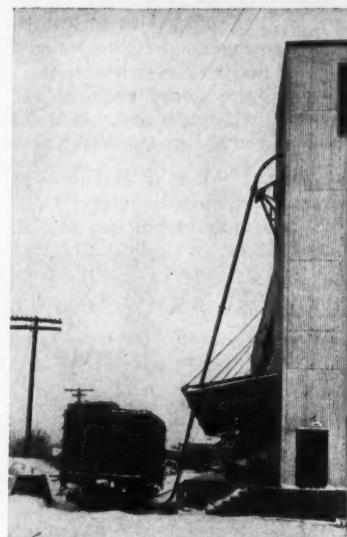
Model KP, designed for use with pallets, features an adjustable link, large wheels, and easier steering. Models KN and KW are similar to the pallet truck, but are equipped with a platform for handling skids. Model KT is a mobile power unit without any lifting element. It is used as a tractor or pusher. Lift stacking is accomplished with a straddle type truck, model KHL. For semi-live platforms, manufacturer features a tongue lift truck having a capacity of 4000 lb lift with an 8000 lb trailing load. This is model KTL.

Issued by Lift Trucks, Inc., Dept. CP, 2425 Spring Grove Ave., Cincinnati 14, O. When inquiring specify CP 5536 on handy form, pages 2 and 3.

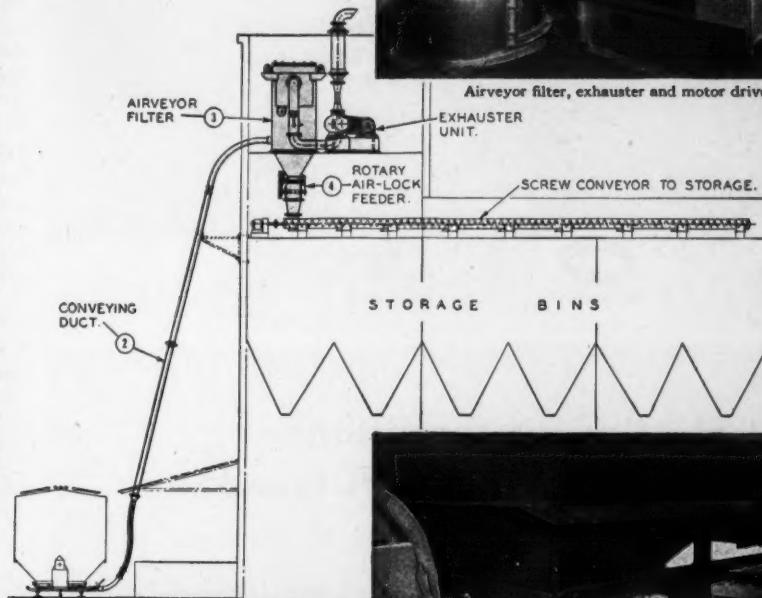
ever consider MOVING chemurgics* BY AIR?

The AIRVEYOR.

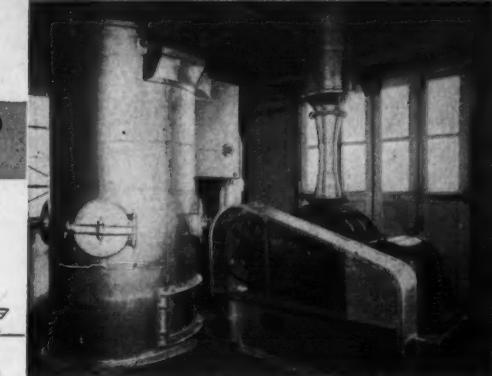
(for example—starch)



Unloading starch from hopper car to plant. Flexible hose connection between twin-nozzle and conveying duct to Airveyor filter in the building.



*it's Cheaper—Safer
—More Efficient*



Twin-nozzle arrangement for hopper-car unloading.

The Airveyor in your plant is like having the shipper deliver right to your storage bins. And it goes a step better than that! The Airveyor not only unloads and conveys from car to storage, but a flip of a switch delivers your material direct from storage to process. And while it's being efficient, it's also saving you money.

The Airveyor pays for itself in a relatively short time. It saves the difference in cost between bag and bulk shipment, and also lowers the cost of handling and storage. Labor costs are reduced because the Airveyor requires the attention of only one man.

Important from the safety angle is the fact that

dusting has been eliminated.

Maintenance time and costs are negligible because there are very few moving parts. The system can be blown clear of all residue. Retention of all visible dust is assured.

Installation of this better method of handling starch, soda ash, lime, salt cake, clay, or other dry pulverized materials will prove of great advantage to you. Why not consider Airveyor's possibilities in your plant? Without obligation, a Fuller engineer will analyze your present conveying system and show you how the Airveyor can help in your operations.

A-124

Fuller

DRY MATERIAL CONVEYING SYSTEMS
AND COOLERS—COMPRESSORS
AND VACUUM PUMPS—FEEDERS,
AND ASSOCIATED EQUIPMENT

FULLER COMPANY
Catasauqua, Pennsylvania
Chicago 3—120 So. LaSalle St.
San Francisco 4—420 Chancery Bldg.

When inquiring check CP 5537 on handy form, pgs. 2-3

There's an idea here for you!



**this air conditioner
is "travel conditioned"**

Even the finest appliance is useless, unless it is delivered to the customer in good condition. And to make sure this efficient Oasis Air Drier does arrive in perfect condition, the Ebco Manufacturing Company, Columbus, Ohio, ships it in this H & D engineered shipping box. Specially designed interior packing, with wax-coated surfaces to protect the product's finish, gives complete protection against jolts and bumps in transit.

The H & D Package Laboratory is ready to help with any shipping problem, to provide extra protection, or to give better display . . . increased sales . . . lower shipping and packing costs. For booklet, "Package Engineering," write Hinde & Dauch, 5107 Decatur St., Sandusky, Ohio.

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SANDUSKY, OHIO • ST. LOUIS • WATERTOWN, MASS. OFFICES IN PRINCIPAL CITIES.

When inquiring check CP 5538 on handy form, pgs. 2-3

Page 80

MATERIAL HANDLING

**Dump and gate barrows
triple the load 1 man
can handle . . .**

both models have rubber tires, capacity of 12 cu ft

Uses: For handling a wide range of materials in operations in processing plants where carts and wheel barrows are customarily used.

Features: Equipped with pneumatic tires for quietness and to prevent damage to floors or exterior paving. Discharge gate model requires no lifting to discharge load. Made of heavy-gauge steel throughout.

Description: Made in two models with and without discharge gate. Former unit empties quickly, safely, and completely by tipping slightly. Discharge gate model is easily operated by trip bar. Specifications are



No-tip discharge gate barrow

identical except for inclusion of discharge gate. Capacities are 12 cu ft or 1,800 lb. Top body length, 42"; body depth, 36"; body width, 21"; axle length overall, 32"; height from floor (front), 48"; from floor (rear), 41".

Source: Speed Barrows are built by American Conveyor Co., Dept. CP, 1115 West Adams St., Chicago 7, Ill. . . . or for more information check CP 5539 on handy form, pages 2 and 3.

**Regular mill type trough,
sprockets used for
heavier chain . . .**

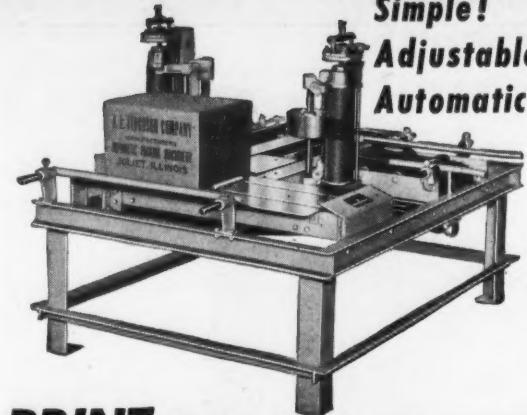
larger diameter rivets, pins impart greater strength

Uses: Conveys sawdust, wood chips, refuse, and similar materials.

Features: Built to handle assignments probably too difficult for usual mill type chain, but operates over the same sprockets and in the same troughs.

Description: Superior strength is

**Simple!
Adjustable!
Automatic!**



PRINT SHIPPING CASES AS YOU USE THEM!

PACKOMATIC gives you another time and money saver in its new and improved case imprinter. Prints from one to eight lines on any one or all panels, depending upon size of type and height of case. Print from new foam rubber type that follows surface contours and insures new neatness and legibility. Print in colors with new special inks that dry quickly. No blur . . . no smudge . . . no handling delays. NEW simplicity of operation. New sturdy construction. Details without obligation. J. L. Ferguson Company, Route 52 at Republic Ave., Joliet, Illinois.

PACKOMATIC
PACKAGING MACHINERY
J.L. FERGUSON CO. JOLIET, ILL.

Member of Packaging Machinery Manufacturers' Institute

When inquiring check CP 5540 on handy form, pgs. 2-3

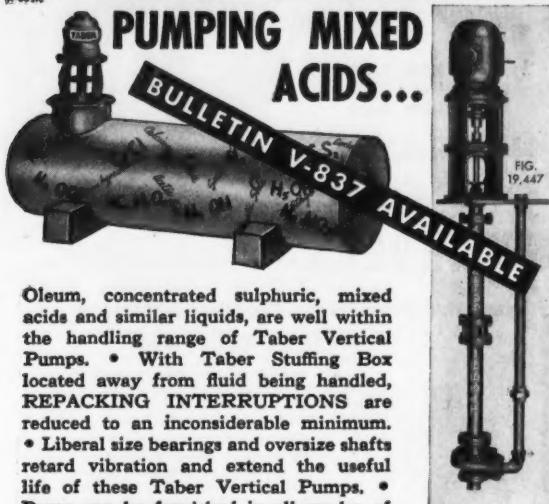
	THOMAS MAKES 1000 DIFFERENT TRUCKS Write FOR COMPLETE CATALOG AND PRICE LIST		
Case Trucks			
Freight Trucks			
Rack Trucks			
Drum Trucks			
Dollies			
Shelf Trucks			
Box Trucks			
Balance Type Floor Trucks			
Dump Trucks			
Wagon Trucks			
Barrel Drain Racks			
THOMAS TRUCK & CASTER CO.			
191 MISSISSIPPI RIVER KEOKUK, IOWA			

When inquiring check CP 5541 on handy form, pgs. 2-3

CHEMICAL PROCESSING

TABER for Higher PRACTICAL Performance

H-931A



Oleum, concentrated sulphuric, mixed acids and similar liquids, are well within the handling range of Taber Vertical Pumps. • With Taber Stuffing Box located away from fluid being handled, REPACKING INTERRUPTIONS are reduced to an inconsiderable minimum. • Liberal size bearings and oversize shafts retard vibration and extend the useful life of these Taber Vertical Pumps. • Pump can be furnished in all grades of nickel chrome alloys, iron, bronze or carbon steel obtainable . . . whichever customer has found most suitable. Please use business stationery when writing for Complete BULLETIN V-837.

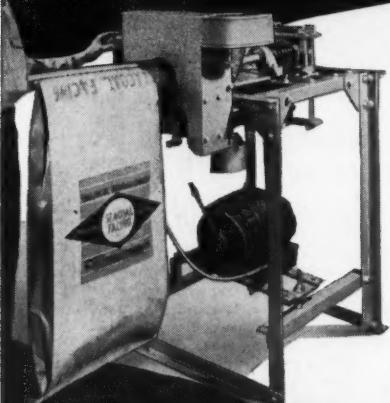
TABER PUMP CO. (Est. 1859) 320 Elm St., Buffalo 3, N.Y.

TABER PUMPS

When inquiring check CP 5542 on handy form, pgs. 2-3

BLACK DIAMOND AUTOMATIC
CONTROLLED WEIGHT

valve bag packer



Accurate • Fast
Simple to operate
Push-button control
Material agitating feed hopper
Position of bag on filling tube does not affect final bagged weight
Moderately priced

★
PERFORMANCE
GUARANTEED
★

FOR
FURTHER
INFORMATION
WRITE BLACK PRODUCTS COMPANY
TO 13513 S. CALUMET AVE. • CHICAGO 27, ILL.
MANUFACTURERS SINCE 1912

When inquiring check CP 5543 on handy form, pgs. 2-3

MATERIAL HANDLING

achieved by alternating steel with cast links, and using larger diameter rivets and pins. Side bars of steel links are accurately blanked from high carbon steel. Cast links have wide wearing shoes which are tapered to avoid catching.

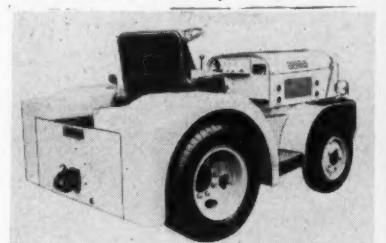
Source: Chain Belt Co., Dept.CP, 1600 W. Bruce St., Milwaukee 4, Wis. . . . or for more information check CP 5544 on handy form, pages 2 and 3.

12-thousand pounds drawbar pull of tractor . . .

diesel or gasoline powered with torque converter

Uses: Tractor has 12,000-pound drawbar pull for a host of pulling and pushing operations.

Features: High points are torque converter, 4-wheel hydraulic brakes,



Diesel or gasoline powered tractor with torque converter

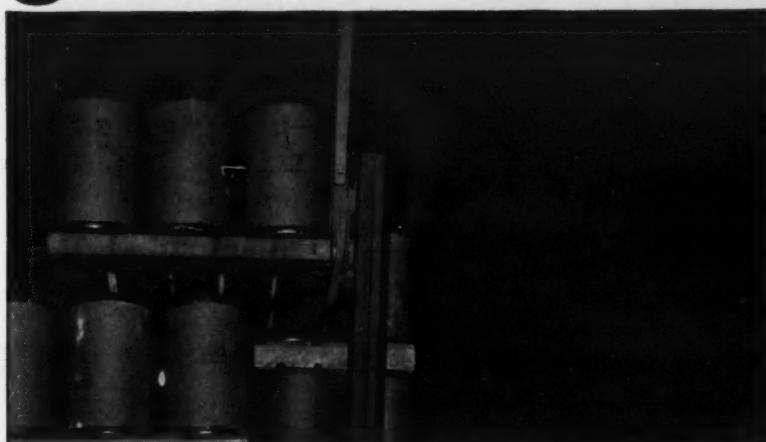
diesel or gasoline power, dual drive wheels, heavy duty bumper, adjustable driver seat, and 4 forward speeds.

Description: Operating data for Model HA-120 Shop Mule Tractor are tabulated below:

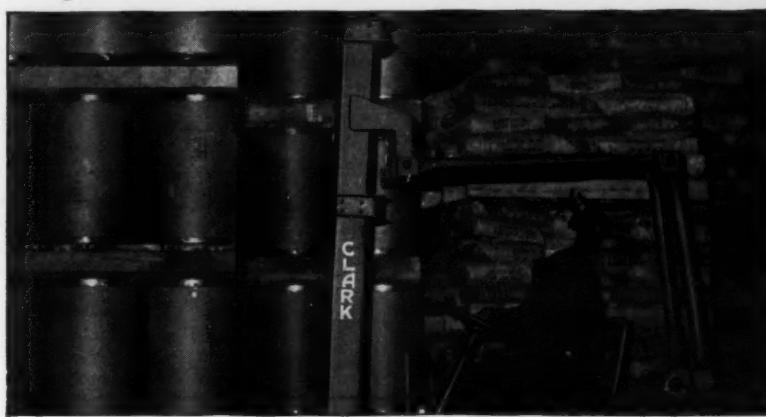
Drawbar pull	
Standard	12,000 lb
With wheel weights	13,000 lb
Length, less towing eyes	125½"
Width overall	86"
Height overall	66"
Wheelbase	72"
Underclearance at center	14"
Turning radius	
Outside	164"
Inside	32½"
Turns in intersecting aisles	114"
Speeds	
Forward	1.5, 3.5, 6.5, 10.75 mph
Reverse	1.5 mph
Tread	
Front wheels	55"
Drive wheels	65½"
Tires	
Front wheels	8-ply 6.50x16
Dual drive wheels	10-ply 8.25x20
Weight	
Standard	15,980 lb
With wheel weights	17,100 lb

Source: The Buda Company, Dept. CP, Harvey, Ill. . . . or for more information check CP 5545 on handy form, pages 2 and 3.

Cash in on overhead-



space, that is — with



Clark fork-lift trucks!



CLARK ELECTRIC AND GAS POWERED
FORK TRUCKS
AND POWERED HAND TRUCKS • INDUSTRIAL TOWING TRACTORS



INDUSTRIAL TRUCK DIVISION • CLARK EQUIPMENT COMPANY • BATTLE CREEK 9, MICHIGAN
Please send me a copy of your new booklet, "Safety Saves."

Name _____

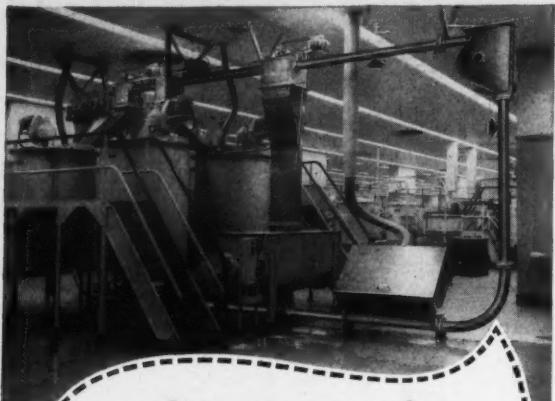
Firm Name _____

Street _____

City _____ Zone _____ State _____

AUTHORIZED CLARK INDUSTRIAL TRUCK PARTS AND SERVICE STATIONS IN STRATEGIC LOCATIONS

When inquiring check CP 5546 on handy form, pgs. 2-3

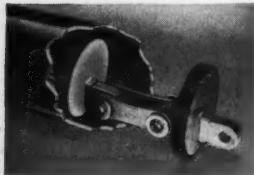


where immaculate cleanliness is vital
UPJOHN specifies

the amazingly versatile

Hapman

TUBULAR CONVEYORS



Here you can visualize the unusual versatility of Hapman Sealed-pin Chain Conveyors. First, note this installation photo from The Upjohn Company, Kalamazoo, Michigan. On a job where *sanitation*

is vital, Hapman Conveyors carry heavy pharmaceutical powders from one processing unit to another. The circuit is dust-proof and odor-confining.

Contrast with this the many applications of Hapman Conveyors which carry sludge from grinding wheels or quench tanks . . . chips from machine tools . . . coal and carpet tacks . . . ground glass and grain.

Then consider: To solve so many conveying problems — with such vastly varied requirements — Hapman Conveyors must offer outstanding advantages. And they do — in handling almost any kind of wet or dry flowable materials. Get full details as related to your problems.

Write for your copy of
Hapman Catalog CP-751
for details and applications



Hapman CONVEYORS, INC.
DIVISION HAPMAN-DUTTON COMPANY
KALAMAZOO MICHIGAN

When inquiring check CP 5547 on handy form, pgs. 2-3

MATERIAL HANDLING

Time delay prevents jack rabbit starts with fork truck . . .

device to eliminate reversal of power in any but first speeds is another feature

Uses: For handling loads up to 2000 lb. Designed to fill needs of companies desiring sit-down operation, short wheelbase and maneuverability.

Features: Time delay between speeds prevents jack-rabbit starts that might shift and damage loads. A special non-plugging device on the electric controller prevents reversal of power in any but first speeds, thus preventing shock to the motor and drive unit.

Description: Line of light capacity electric fork trucks has capacities up to 2000 lb. Tilting mechanism



Fork truck has automotive type controls

is hydraulically operated, can tilt the mast 5° forward or 10° backward to center the load.

Specifications for 2000 lb capacity model include: overall height, 83"; wheelbase, 41 1/4"; length to fork face, 64 1/8"; and speed, 6 1/2 mph.

Source: The Yale & Towne Manufacturing Company, Philadelphia Division, Dept. CP, 11,000 Roosevelt Blvd., Philadelphia 15, Pa. . . . or for more information check CP 5548 on handy form, pages 2 and 3.

Clamp's "twist-of-wrist" action picks up rolls, "spots" them snugly; no jockeying truck . . .

handles rolls with diameters of 24-48" weighing up to 2,000 lb; mounts on 4,000 lb electric truck

Uses: Simplifies mechanical handling of bulky rolls of paper and similar materials.

Features: Wrist action enables driver to shift load several inches in either direction, while truck is stationary. When clamp is in vertical position, operator can place loads close together without jockeying truck about. Load cannot be dropped, as should pressure start to decline, pump automatically replenishes it.

Description: Capacity is 2,000 lb. Rolls with a diameter of from 24 to 48" can be handled. Clamp attaches to a 4,000 lb truck (highlight electric).

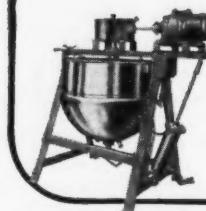
Vertical and horizontal operations are controlled by push-buttons, but clamping is governed by a rotating switch

For Safety

in DUMPING or CLEANING

LEE HYDRAULIC OPERATING CYLINDERS

Operated Directly From Your Present Water System
No New Lines Are Required!



All Lee Tilting Kettles and Agitators are available with Hydraulic Operating Cylinders to eliminate the dangers—such as scalding of the operator, loss of product or damaged equipment—caused by the ever-changing center of gravity when tilting. The smooth action of this cylinder permits perfect control and balance for safe pouring or cleaning of Lee corrosion-resistant kettles.

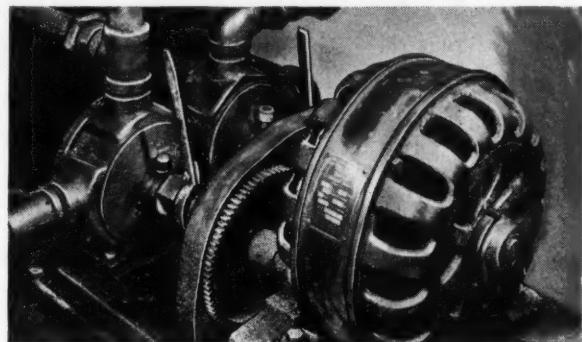
Our descriptive bulletins on these units will be of interest to you.

LEE METAL PRODUCTS CO., INC.

418 PINE STREET • PHILIPSBURG, PA.

ALL LEE KETTLES ARE
MADE TO A.S.M.E. CODE

When inquiring check CP 5549 on handy form, pgs. 2-3



A 1915 MODEL AT WORK

There's something of this old Work-Horse in every VIKING PUMP

This old-timer probably does not look like Viking pumps you are now using, but something of this old work-horse has always been built into every Viking pump. The ingredients of that "something" are: ONE, the operating principle (most copied of all rotary pump designs) and, TWO, the old-time skill and workmanship of generation after generation of expert craftsmen.

When you specify Viking, you are sure of a good name, a good product and good pumping service. Send for free bulletin 51SCC.



Viking PUMP COMPANY
Cedar Falls, Iowa

When inquiring check CP 5550 on handy form, pgs. 2-3

MATERIAL HANDLING

which is an important safety factor. It makes sure that the driver does not accidentally bump button and drop load.

When the hydraulic clamping device is held horizontally, wrist action permits picking up second roll from a nested position.

Rotating switch is coupled with an automatically operated pressure switch, which takes over as soon as the control is turned to "on" position. Pressure switch controls hydraulic pump and keeps pressure constant.

Truck on which clamp is mounted tiers to 132". Clamp revolves through 360° in either direction.

Source: Roll attachment for use on trucks is built by Automatic Transportation Co., Dept. CP, 149 West 87th St., Chicago, Ill. . . or for more information check CP 5551 on handy form, pages 2 and 3.

Trailer's self-dumping hopper locks securely on return to loading position . . .

unit can be moved manually or handled by fork-lift truck to dump loads from elevated position

Uses: For unloading and hauling chemicals and various bulk materials, scrap, castings and wire.

Features: Self-dumping hopper is held by safety lock with safety catch. Balance of hopper is such that when the lock is released the hopper dumps its load, and then returns to the loading position. Lock then automatically engages, holding hopper in place. Besides being pushed by hand, it can be handled by a fork-lift truck and elevated for emptying load into gondola cars, bins, stock piles or other facilities.

Description: Hopper capacity is one cubic yard. Equipment includes rubber tired and castered rear wheels permitting trailer to be pushed easily by one man.



Self-dumping trailer

Hopper is of heavy gauge steel with rolled edges to prevent injury to personnel or load.

Source: Self-dumping trailer is built by Phillips Mine & Mill Supply Co., Dept. CP, 2339 Jane St., Pittsburgh 3, Pa. . . or for more information check CP 5552 on handy form, pages 2 and 3.

New
STAINLESS STEEL
CHEMICAL CONTAINERS
by
Hackney
MILWAUKEE

Ideal for shipping and storing
nitric acid, phosphoric acid, solvents
extracts, fruit juices, oils
and many other products

LOWER COSTS

Shippers of chemical products can now enjoy important savings—thanks to a new Hackney Stainless Steel Chemical Container. Compact and lightweight, this 15-gallon barrel can be handled easily by one man, reducing handling costs. What's more, further savings are possible because of the lower transportation costs, reduction in storage space and elimination of breakage.

EASILY CARRIED

Rugged, full curled separate foot ring construction provides easy, quick and sure handling. Empty or full, Hackney Acid Barrel can be readily grasped and handled by handy ring.

EASILY IDENTIFIED

Ownership of Hackney barrel clearly indicated by easily read letters in bottom foot ring. Prominent display of owner's name and address also serves

as a permanent advertising medium. ICC data embossed in top ring.

POUR SAFELY

No hazards of slipping, dropping or spilling strong, dangerous acids! That's because of the safe, positive grip assured by the curled foot rings.

STACK PERFECTLY

Hackney Acid Barrels are designed for positive stacking. Bottom foot ring fits snugly and securely over top ring of next barrel. Barrels cannot fall from this compact stack. Hackney Acid Barrels are offered in various types of stainless steel—with specific

type dependent on intended use. Write today for full details.



PRESSED STEEL TANK COMPANY

Manufacturer of Hackney Products

1463 S. 66th St., Milwaukee 14

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208 S. LaSalle St., Room 796, Chicago 4

1387 Vanderbilt Concourse Bldg., New York 17

936 W. Peachtree St., N. W., Room 126, Atlanta 3

568 Roosevelt Bldg., Los Angeles 14

CONTAINERS FOR GASES, LIQUIDS AND SOLIDS

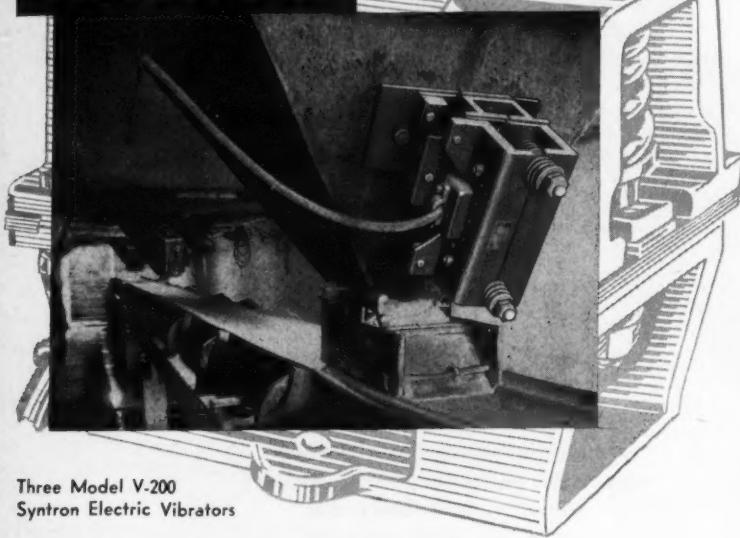
When inquiring check CP 5553 on handy form, pgs. 2-3



SYNTRON

"Pulsating Magnet"

ELECTRIC VIBRATORS



Three Model V-200
Syntron Electric Vibrators

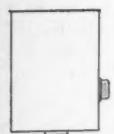
For smoother material flow with no unscheduled stoppages due to material arching and plugging in bins, hoppers and chutes. . . apply Syntron Electric Vibrators.

The right size Syntron Vibrator properly applied sets up a flow of high speed vibrations (3600 vib. per min.) that will cause the most stubborn and difficult material to flow freely, and that will move tons of inert weight.

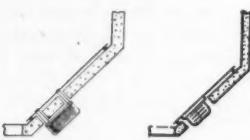
Syntron Electric Vibrators will save their cost by eliminating damage to equipment by sledgeing and rodding. . . cutting down replacement costs.

The Vibrators are widely used on storage bins, hoppers and chutes for flowing materials ranging from fine powder to large chunks. Available in a variety of sizes . . . small models for little hoppers and large heavy-duty models for big bins and bunkers. Also available in a complete line of semi-noiseless models.

Write for literature



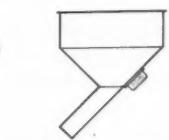
Flat Bottom
Bin with
Center Discharge



Wooden Hoppers



Concrete Hoppers



Inclined
Chutes

Hopper with
Sloping Discharge

SYNTRON COMPANY

110 Lexington Avenue

Homer City, Penna.

When inquiring check CP 5554 on handy form, pgs. 2-3

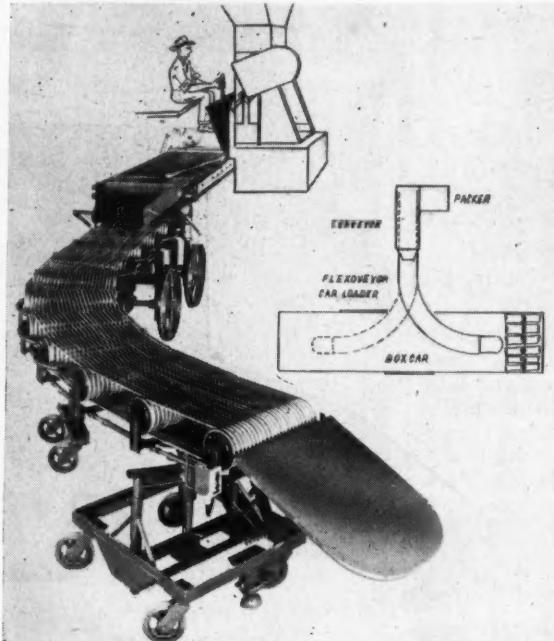
MATERIAL HANDLING

Bags carried into box cars
from filling machine on
telescoping conveyor . . .

flexible loading section bends into any curve up to 90° angle while under power

Uses: Telescoping conveyor operates beneath bag filling machine and facilitates moving bags to loading point inside box cars or to other locations.

Features: Conveyor can be bent into any curve, up to a 90° angle, while under power and go around box car door and into end of car. As loading progresses,



Flexible conveyor loads up to 30 bags per minute

extended conveying section telescopes under the bag filling machine, and flow of bags continues without interruption. All changes in position of the loading element can be made while conveyor is running.

Description: Conveying element consists of a series of endless spring belts which operate over grooved steel rollers. Loading capacity is 30 bags per minute. Unit can be engineered to suit conditions.

Source: Telescoping loading system for bagged material is built by Flexovveyor Mfg. Co., Dept. CP, 1220 So. Alcoma St., Denver 10, Colo. . . or for more information check CP 5555 on handy form, pages 2 and 3.

**Easily attached roll clamps
now provided for fork trucks
of 1 ton capacity . . .**

manually operated relief valve permits precise adjustment of hydraulic pressure

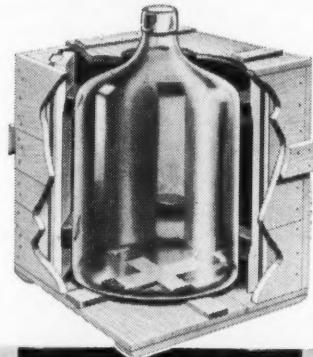
Uses: Designed for attachment to fork trucks of 2,000 lb capacity, to pickup, move and rotate rolls of 1,500 or 950 lb maximum weight, depending on model of truck involved.

Features: Readily removable and can be used interchangeably with standard forks. Manually operated relief valve is standard. It permits adjustment of hy-

HERCULES CARBOY BOXES

give you
**EXTRA
PROTECTION**

These sturdy all wood boxes, with interchangeable cork (Hercules) or rubber cushion (Aero) inserts, give all point protection and reduce bottle breakage. They're easy to handle, eliminate the need for foreign filler materials, and reduce occupational hazards.



13 GALLONS

SPECIFICATIONS

SIZE: 17½" x 17½" x 22" (I.D.)

WEIGHT: Approx. 45 lbs. without
bottle.

CARBOY: 13 Gallons.

Available also in 5 gallon, 6½
gallon and other capacities.

COMPLIES WITH CLASSIFICATION

I.C.C. I-A.

For
Information
write to
Dept. P

**PROMPT
DELIVERY**

NATIONAL
BOX & LUMBER COMPANY
NEWARK 5, NEW JERSEY



When inquiring check CP 5556
on handy form, pgs. 2-3

MATERIAL HANDLING

draulic pressures to suit rolls varying as to size and weight, and reduces possibility of damage resulting from excessive pressure.

Description: Unit can be rotated through 90° so that a roll may be picked up from horizontal position



Fork truck clamp attachment rotates through 90°

and stood on end, or vice versa. It is rotated by a cylinder, with chain and sprocket linkage, and is provided with positive stops at vertical and horizontal positions to eliminate excessive strain on the chain when loaded.

One clamp arm is rigidly mounted and when rotated is always in bottom position for handling horizontal rolls. Second clamp is hydraulically actuated and provides a maximum clamping force of 5,000 lb. Clamp pads are hinge-mounted to fit against rolls and exert maximum pressure over entire surface.

Source: Clark Equipment Company, Industrial Truck Division, Dept. CP, Battle Creek, Mich. . . . or for more information check CP 5557 on handy form, pages 2 and 3.

Selecting truck body to fit your requirements aided by kit . . .

assemble options included with cardboard model to get what you want, mass production item results

It is now possible for a man to design and order his own truck body and still get a mass production job. This seemingly contradictory feat can be achieved with a model kit which the Fruehauf Trailer Company supplies to prospective truck body buyers.

Although these are actually production line bodies, there are over 500 options which the buyer can exercise to make the body fit the needs of the particular business in which it is going to be employed.

The model kit enables the prospective purchaser to assemble his own model in cardboard for the purpose of studying the advantages of each set of options he is considering. When the model is assembled, it provides a replica of the body desired.

(Information received from the Fruehauf Trailer Company, Dept. CP, 2553 S. Archer Ave., Chicago, Ill.)



Write for full details regarding
Towmotor Preventive Maintenance.

HOW MANY PEOPLE HAVE YOU TALKED TO ABOUT AMERICANISM TODAY?

When inquiring check CP 5558 on handy form, pgs. 2-3



EVERYWHERE YOU LOOK TOWMOTOR REPLACEMENT PARTS ARE QUICKLY AVAILABLE

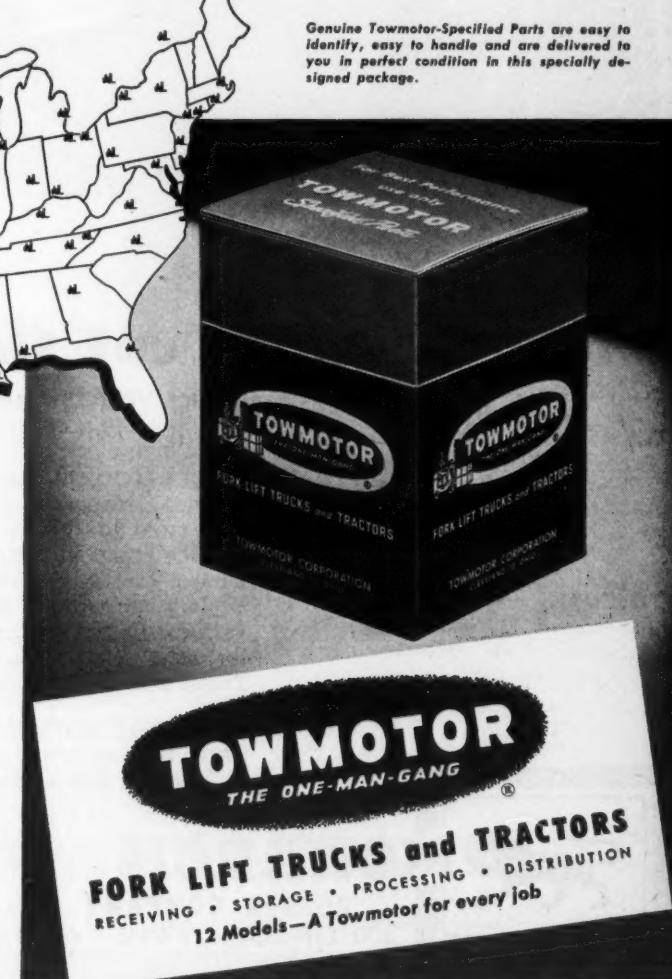
To make available man-power more productive and more efficient, Towmotor Fork Lift Trucks provide continuous, 'round-the-clock service on all handling jobs. However, even normal mechanical operations require occasional replacement parts to maintain top operating efficiency. To take care of your Towmotor requirements your Towmotor Representative carries a full line of GENUINE Towmotor-Specified Replacement Parts, *packaged* for quick identification, ease of handling and protection against damage. This service assures you of ready availability of any Towmotor part, and relieves you of the trouble and expense of maintaining a parts inventory. Your Towmotor Representative is equipped and ready to help you. TOWMOTOR CORPORATION, Div. 23, 1226 E. 152nd St., Cleveland 10, Ohio.



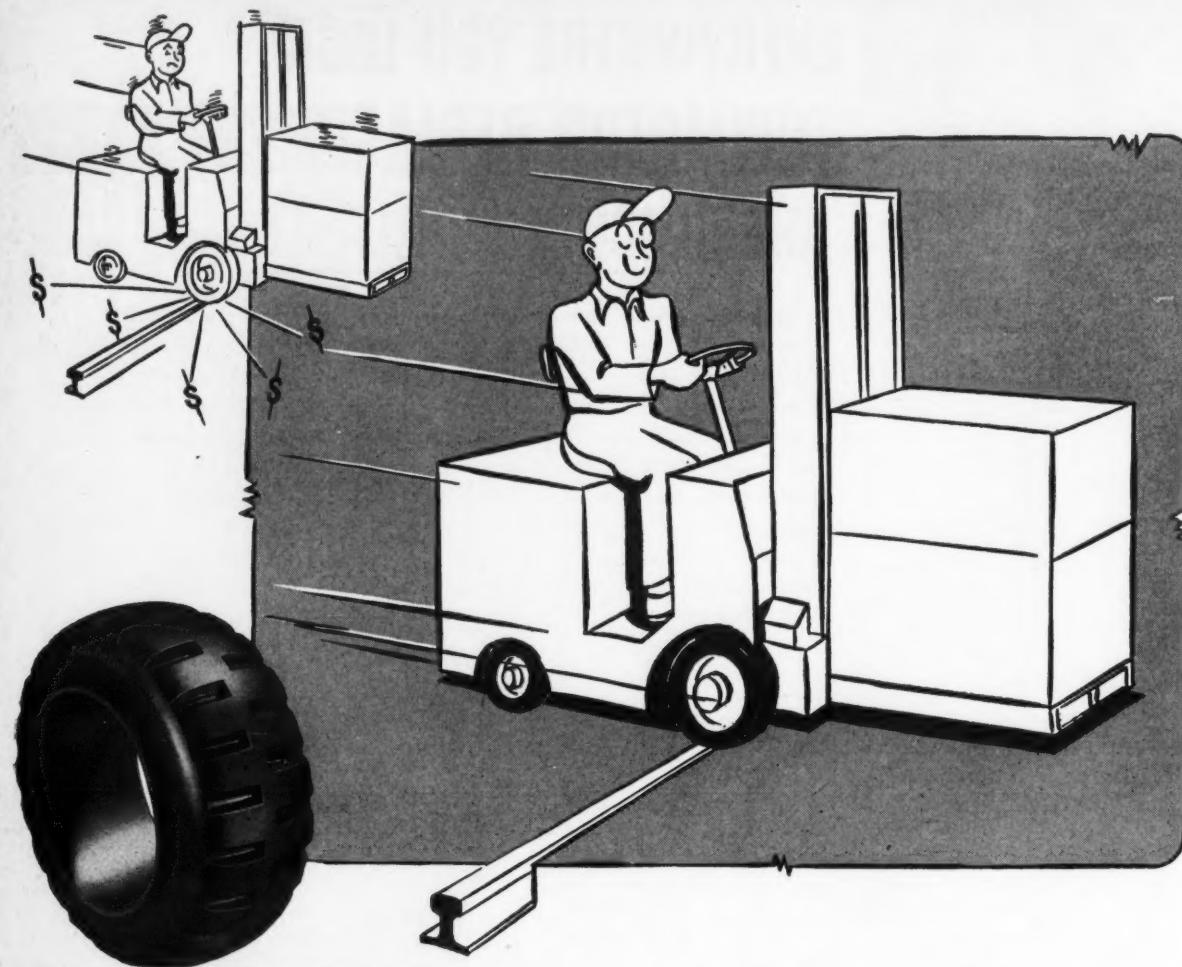
FOR TOWMOTOR DISTRIBUTOR—
consult your classified
telephone directory

Towmotor Preventive Maintenance Service Eliminates Down Time!

Available through Towmotor Representatives, *Towmotor Preventive Maintenance Service* helps keep your Towmotor equipment up to maximum operating efficiency. Whether you have a single Towmotor or a fleet, skilled, factory-trained mechanics make regular inspections to assure extra years of profitable operation and trouble-free service. Towmotor Preventive Maintenance Inspections can be scheduled for periods when your Towmotors are not in service. Towmotor-Specified Replacement Parts guarantee top performance.



New



Mono-Cushions cut the cost of bumps

REDUCE VEHICLE MAINTENANCE — by as much as 40%, depending upon operating conditions. Big, burly Mono-Cushions soak up more shock and shock load than any other type of tire, size for size.

REDUCE FLOOR WEAR — The jolt goes both ways when a vehicle hits a bump. Mono-Cushions protect both the truck and the floor from jolts, save you plenty on floor maintenance.

REDUCE LOAD BREAKAGE — All the stability of solid tires without the bumps. Mono-Cushions are saving hundreds of users plenty of money hauling such fragile loads as ceramic products.

REDUCE TIRE COSTS — Switching to Mono-Cushions has cut tire costs for users in all kinds of operations, from warehouses to steel mills. These babies are tough all the way through.

YOUR BEST SOURCE FOR TIRES is the manufacturer of your equipment. He can supply you, through his service branches, with the type of Monarch Tire engineered for your equipment.



THE

MONARCH
RUBBER COMPANY

600 LINCOLN PARK • HARTVILLE, OHIO

SPECIALISTS IN INDUSTRIAL SOLID TIRES AND MOLDED MECHANICAL RUBBER GOODS

When inquiring check CP 5559 on handy form, pgs. 2-3

Cites uses and advantages of preheaters for oil

Automatically controlled electric heaters for preheating heavy fuel oils are described in 4-page catalog. These units accurately raise the oil to the proper temperatures required for good combustion and performance in oil-burning systems. Their use frequently eliminates the need for long steam and condensate line extensions or new steam generating installations where steam is not available for heating oil.

Advantages include the following: only the oil actually used from the storage tank is heated to the temperature necessary for pumping. The excess amount of oil that is pumped is piped back into the heater through the oil return connection provided; this avoids the usual separate return path of the oil through the tank to the heater, and thus eliminates unnecessary reheating. Starting time of the heavy oil system is reduced; oil heating is speeded. Sludge formation is greatly reduced by absence of overheated oil in tank, reducing cleaning costs. Storage tank can be filled at any time with oil at any temperature without affecting oil temperature being delivered to oil burning system.

Recommendations, electrical characteristics, oil heating rates, heater sizes, components, and schematic diagrams are included in Catalog 709, issued by Hauck Manufacturing Co., Dept. CP, 124-136 Tenth St., Brooklyn 15, N.Y. When inquiring specify CP 5560 on handy form, pages 2 and 3.

Over 3500 illustrations in lab supply catalog

Giant laboratory supply catalog — 896 pages in all — contains over 3500 illustrations, is cased in a durable, hard cover. Catalog is reportedly simple to use, as each size and style of a particular item is assigned an individual number. This number is all that is needed on an order. Catalog is issued on company letterhead request, including official title, to Catalog Dept., New York Laboratory Supply Co., Inc., Dept. CP, 76 Varick St., New York 13, New York.

Variety of other uses for hose clamps

Hose clamps, tools, and fittings are described and illustrated in 12-page catalog. Clamps not only serve for making leakproof connections on almost any type of hose, but also solve a wide variety of other clamping and banding problems — splicing electric cable, repairing leaks in pipe lines, clamping guy-wire guards, and mending split cross-arms, posts, beams, or planks. Catalog 300 is issued by Punch-Lok Company, Dept. CP, 321 N. Justine St., Chicago 7, Ill. When inquiring specify CP 5561 on handy form, pages 2 and 3.

Floating roofs for tanks described in bulletin

Three types of floating roofs for storage tanks are discussed in 8-page bulletin. Double deck roof (reportedly the most efficient and most widely used) provides insulation of the entire surface of the liquid in the tank to substantially reduce corrosion and product loss due to boiling, breathing,

Literature

and filling. Pontoon roof uses minimum of material to give maximum roof buoyancy and is recommended for tanks having diameter of over 50'. Pan type is used in areas free of ice and snow, is the most economical for storing products of low volatility.

Big advantage of floating roofs is that there is little or no air space between top of liquid and bottom of roof; the oxygen in this air space is largely responsible for destructive conditions. Each type of floating roof is fully described and illustrated in Bulletin 51 F, issued by Hammond Iron Works, Dept. CP, 630 Fifth Ave., New York 20, N. Y. When inquiring specify CP 5562 on handy form, pages 2 and 3.

Corrosion resistance featured in varied line of items

Describing valves, flanges, hose nipples, bars, welding electrodes, and screw machine products made of corrosion-resistant alloy, 6-page Bulletin W-350-B5C is issued by Worthington Pump and Machinery Corporation, Dept. CP, Harrison, N. J. When inquiring specify CP 5563 on handy form, pages 2 and 3.

Two styles presented in crusher line

Vertical cone and horizontal saw tooth crushers are thoroughly described and illustrated in 8-page, 2-color catalog. Machines are available in a variety of sizes and powers; specific applications are given for each. Catalog 46 is issued by Mercer-Robinson Company, Inc., Dept. CP, 30 Church St., New York 7, N. Y. When inquiring specify CP 5564 on handy form, pages 2 and 3.

Text and illustrations describe air valves

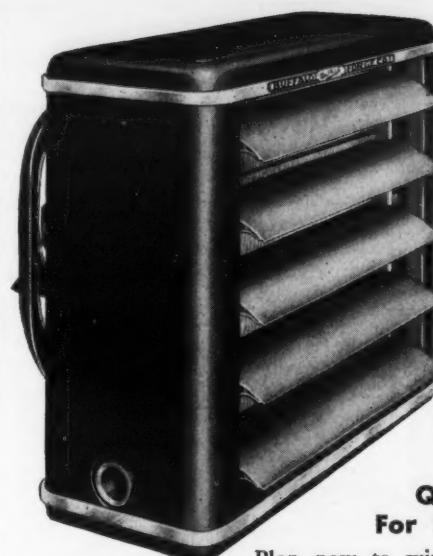
Complete line of air valves is presented in 44-page illustrated catalog. Hundreds of models and modifications are covered, including straightway, 3-way, and 4-way five-port units in various sizes of hand, foot, solenoid, pilot, remote control, cam, speed control, shut-off, quick exhaust, and miscellaneous valves. Sectional views, installation data, and diagrams are included, along with several pages of general reference data.

Complete air valve catalog is issued by Ross Operating Valve Company, Dept. CP, 120 E. Golden Gate, Detroit 3, Michigan. When inquiring specify CP 5565 on handy form, pages 2 and 3.

Controls automatically hold mill adjustment

Mill is described as the closest approach to automatic milling. Air-powered controls are reported to spread feed evenly across the rolls and maintain roller clearance at preset value. Several other automatic features are built into this equipment. Unit has been used for various grains, feed and chemical grinding.

Bulletin 06B7670 describing the "Air-Set" Roller Mill is issued by Allis-Chalmers Mfg. Co., Dept. CP, 1114 S. 70th St., Milwaukee, Wis. When inquiring specify CP 5566 on handy form, pages 2 and 3.



Settle Next Winter's HEATING PROBLEMS Now!

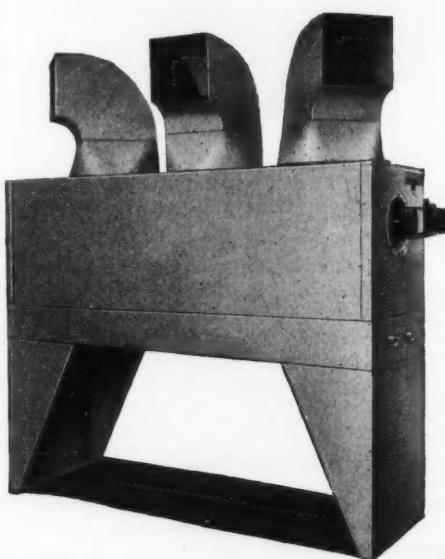
INSTALL



Quick Heat For Small Areas!

Plan now to wipe out any chilly areas that cramped production last winter.

"Buffalo" Breezo-Fin Heaters are very easily installed in suspended position. They operate efficiently on as little as 2 lbs. steam — are available in 20 sizes — have quality Aerofin heater element for maximum radiation and "Buffalo" Breezo Fan for positive heat throw. Now is the time to write for Bulletin 3137-D for the facts!



Up And Out Of The Way!

Another space-saver is the Suspended "Buffalo" Lowboy Heater, here supplying fresh, filtered, heated air to an entire room. As a window installation this unit is ideal in supplying makeup air for plants using large-capacity exhaust systems. Unit has high-efficiency non-corrosive Aerofin heater element and "Buffalo" mixed-flow fans on hollow shaft.

To Heat Large Floor Areas!

The compact Highboy Heater, with readily adjustable outlets for louvers or duct connection, is simple to install as are all "Buffalo" Unit Heaters. Unit shown is equipped with by-pass damper and the same efficient coils and fans as the Lowboy above. Arrangements and combinations to fit your layout. Plan now for next winter — write for Bulletin 3704!

BUFFALO "Buffalo" FORGE COMPANY
FIRST
FOR FANS
BUFFALO, N. Y.
Canadian Blower & Forge Co., Ltd., Kitchener, Ont. Branch offices in all Principal Cities

VENTILATING
FORCED DRAFT

AIR WASHING
COOLING

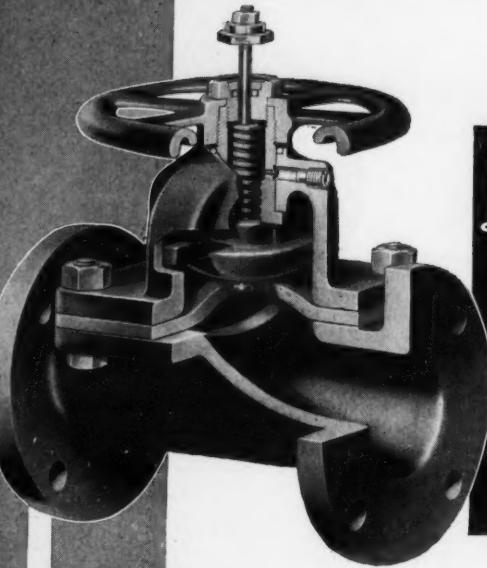
AIR TEMPERING
HEATING

INDUCED DRAFT
PRESSURE BLOWING

EXHAUSTING
PRESSURE BLOWING

When inquiring check CP 5567 on handy form, pgs. 2-3

Here is the valve that revolutionized flow control of Sulphuric Acid . . .



HILLS-MCCANNA
Saunders Patent
DIAPHRAGM
VALVE
with L-1
PLASTIC
DIAPHRAGM

Sulphuric acid up to 66° Bé can now be valved without leakage, dripping or sticking . . . with Hills-McCanna Diaphragm Valves equipped with the new L-1 plastic diaphragms. This new development combines the tried and proved Saunders Patent pinch clamp principle with a diaphragm of a special type of plastic that is particularly resistant to concentrated sulphuric acid.

Hills-McCanna Diaphragm Valves with L-1 diaphragms are suitable for temperatures up to 125° F. and pressures up to 100 psi. Sizes from $\frac{1}{2}$ " thru 4" are available, handwheel operated, quick opening (lever operated) and sliding stem models. Choice of nearly 50 body materials or linings including cast iron, cast steel, Durimet or glass lined.

Literature is available describing Hills-McCanna Valves with data on their use for acid and other services. Write for your copy outlining the nature of your application. HILLS-MCCANNA COMPANY, 2370 W. Nelson St., Chicago 18, Ill.

The valve illustrated in cut-a-way above is the Hills-McCanna Model 600 semi-sealed bonnet acid valve with L-1 plastic diaphragm and tell-tale travel stop indicator. Valves of this type can be furnished where particularly rigid safety precautions must be taken.

HILLS-MCCANNA CO.

saunders patent

diaphragm valves

Also manufacturers of — Proportioning Pumps

Force-Feed Lubricators

• Magnesium Alloy Castings

When inquiring check CP 5568 on handy form, pgs. 2-3

NEW LITERATURE

Basic facts, industrial uses stressed in organic text

Intended as a text book for beginning students, this volume suggests the industrial importance of the material it covers. Theory is adequately presented, but the emphasis is placed on factual organic chemistry. Recent important applications and new industrial possibilities are included. In this seventh edition, extensive revision of the hydrocarbon and polymer sections has been made. Charts summarize uses of important organics, and reactions used in rubber and plastics. Outlines of petroleum, by-product coal and other industries are given. To obtain "Introduction to Organic Chemistry," seventh edition, remit \$5.00 direct to John Wiley & Sons., Inc., Dept. CP, 440 Fourth Ave., New York 16, N. Y. When inquiring specify CP 5569 on handy form, pages 2 and 3.

Safety pays small business too

Small business has nearly 3 times as high an accident frequency as big business. Two-color, 24-page book explains how accidents are costly and how they may be prevented by small organizations. "Safety Pays the Smaller Business" is issued by National Safety Council, Dept. CP, 425 N. Michigan Ave., Chicago 11, Ill. When inquiring specify CP 5570 on handy form, pages 2 and 3.

Shows water treatment

Sixteen-page, 3-color bulletin shows the basic reasons for water treatment and specific solutions to problems. Boiler water, water lines, cooling systems, brine systems, waste water, and Zeolite softeners are considered. Ten common impurities and their usual remedies are listed. Bulletin 501 is issued by Brooks Chemicals, Inc., Dept. CP, 3304 E. 87th St., Cleveland 27, O. When inquiring specify CP 5571 on handy form, pages 2 and 3.

Method avoids replacement of worn parts

Two-color publication reports on case histories and methods of spraying metal onto worn parts. Typical figures on expected part life and repair costs are given. "Metco News", Vol. 5, No. 8, is issued by Metallizing Engineering Co., Inc., Dept. CP, 38-14 30th St., Long Island City 1, New York. When inquiring specify CP 5572 on handy form, pages 2 and 3.

Lard-solvent data chart

Chart showing variations in specific gravity with temperature for solutions of pure lard in commercial heptane (16 to 26% concentration) is issued by American Mineral Spirits Co., Dept. CP, 230 N. Michigan Ave., Chicago 1, Ill. When inquiring specify CP 5573 on handy form, pages 2 and 3.

Analysis, control procedures listed with references

Two mimeographed lists are offered covering 1) analysis methods using the filter photometer and spectrophotometer, and 2) titrations using the line-operated pH meter. Photometer list (25 pages) gives references to the literature for specific compounds of organic, inorganic, metallurgical, and



it calls for **OPEN STEEL FLOORING**

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THE WALTER BATES CO.

Joliet, Illinois

TRI-LOK COMPANY

Pittsburgh, Pa.

When inquiring check CP 5574
on handy form, pgs. 2-3

NEW LITERATURE

biochemical fields. pH-meter list shows 83 titrations to which the instrument may be applied. Electrodes for types of reaction are suggested. "Bimet" list on photometers and "Titration" list on pH meters are issued by Central Scientific Co., Dept. CP, 1700 Irving Park Road, Chicago 13, Ill. When inquiring specify CP 5575 on handy form, pages 2 and 3.

Selecting proper model featured in pallet truck bulletin

Two-color, 24-page bulletin illustrates and describes pallet trucks in capacities of 1000 to 15,000 lb. Practical information is given on factors influencing the choice of specific models. Single stroke models feature spring return handles, insuring upright position when not in use. Bulletin is issued by Barrett-Cravens Co., Dept. CP, 4609 S. Western Blvd., Chicago 9, Ill. When inquiring specify CP 5576 on handy form, pages 2 and 3.

Automatic oilers shown in chart

Two-color, 22" x 17" wall chart shows automatic oiler types. "Series 4900" is issued by Trico Fuse Mfg. Co., Dept. CP, 2948 N. 5th St., Milwaukee 12, Wis. When inquiring specify CP 5577 on handy form, pages 2 and 3.

Practical welding topic of book

Profusely illustrated, 6 x 9" book is devoted to the practical side of arc welding. Presentation is in text book form with 32 basic and 29 advanced lessons. Contents cover 1) latest procedures, 2) automatic and semi-automatic hidden arc welding, 3) metal identification, 4) how to select welding joints, and 5) how to make common machine parts using welding rather than casting.

163 pages of the 320-page book give welding applications. To obtain "New Lessons in Arc Welding", remit \$1.00 (\$1.50 outside US) direct to Lincoln Electric Co., Dept. CP, Cleveland, O. When inquiring specify CP 5578 on handy form, pages 2 and 3.

Variety of shredders shown

Specifications and illustrations for several sizes and models of knife-cutter are given in 8-page catalog. Equipment is adaptable to many types of products and is used on scrap leather, rags, metal foil, charcoal, roots and drugs, among others. Efficiency is reported to be very high.

Catalog 47 is issued by Mercer-Robinson Company, Inc., Dept. CP, 30 Church St., New York 7, N. Y. When inquiring specify CP 5579 on handy form, pages 2 and 3.

Diverse refractory products listed and illustrated

Forty-page catalog is well illustrated. Many refractories, refractory cements, special purpose cements, and insulating materials are described. Data is given in some cases. "How to do it" pictures of actual installations appear for most types of materials mentioned. Combined catalog is issued by Refractory & Insulating Corp., Dept. CP, 120 Wall St., New York 5, N. Y. When inquiring specify CP 5580 on handy form, pages 2 and 3.



Many lost man hours can be traced to mold and bacteria growth! You can guard against these attacks, which result in delayed orders and wasted materials, with Dowicide products. That's because effective control of mold and bacteria in industry is gained through the use of these industrial germicides and fungicides from Dow. Fourteen different kinds of Dowicide products are available to fight spoilage caused by micro-organisms. Alone, or in combination, they are bringing economical microbial control to the paint industry. Here, they prolong the shelf life of water paints and, in oil paints, prevent unsightly mold growth on painted surfaces.

In the paper industry, they give effective slime control and make finished paper products mold-resistant. Dowicide germicides and fungicides are also widely acclaimed for their ability to prevent mold and bacteria attacks in the leather, textile and other industries. They are available in both oil and water-soluble types.

Investigate Dowicide products today and provide the proper protection against mold and bacteria. Dow maintains complete laboratory facilities to help you solve your problems. Contact your nearest sales office or write direct to Midland.

THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN

New York • Boston • Philadelphia • Washington • Atlanta • Cleveland • Detroit
Chicago • St. Louis • Houston • San Francisco • Los Angeles • Seattle
Dow Chemical of Canada, Limited, Toronto, Canada

use
DOWCIDE
Industrial

Germicides and Fungicides



When inquiring check CP 5581 on handy form, pgs. 2-3



Gives Giant Upjohn Plant "New Concept of Air Conditioning" with Precise, Dependable, Low Humidities

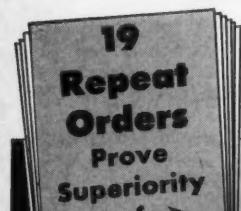


Penicillin! Streptomycin!...Kathabar equipment helps manufacture these wonder drugs, gives low humidities to speed production and maintain product quality. Many processes work better with the proper low humidity, accurately and precisely controlled.

"Kathabar equipment has given us a new concept of air conditioning", said one executive of the nationally famous Upjohn Company.

This precise, dependable control is being adopted enthusiastically by America's drug manufacturers.

Don't overlook humidity in your own plant, one of the basic factors in air conditioning.



**"Humidity Engineering"
with the *Kathabar System***

Another large pharmaceutical house during the last six years has purchased 24 Kathabar units. Kathabar helps produce America's drugs uniformly, inexpensively, consistently.

★ Send for further Kathabar information today on your company letterhead.

SURFACE COMBUSTION CORPORATION, TOLEDO 1, OHIO
KATHABAR DIVISION

When inquiring check CP 5582 on handy form, pgs. 2-3

NEW LITERATURE

Tensile recovery properties of textile fibers given

Information on tensile recovery characteristics of 16 different textile fibers is contained in 59-page illustrated report. Materials are compared as to the percent of their elongation which recovers immediately, that which recovers after a defined period of time, and that which remains "permanently". Tests were conducted electronically.

To obtain PB 103 038, remit \$1.50 (in check or money order payable to the Treasurer of the United States) direct to Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C.

Block form of insulation used at temps to 1900°F

Block insulation for temperatures to 1900°F is the topic of 4-page, 2-color folder. Insulation is a calcined diatomaceous silica product.

Inside spread of folder lists the outstanding properties, augmented by conductivity and heat loss graphs, and includes a recommended thickness table. Various typical applications are also suggested. Back cover shows a few of the special shapes in which insulating blocks can be furnished. "Superex" is issued by Johns-Manville, Dept. CP, 22 E. 40th St., New York 16, N. Y. When inquiring specify CP 5583 on handy form, pages 2 and 3.

Platy pigment extender effects on paint moisture resistance

The effect of platy pigment extenders on the moisture resistance of paint films is told in Technical Bulletin 7, issued by Wet Ground Mica Association, Inc., Dept. CP, 420 Lexington Ave., New York 17, N. Y. When inquiring specify CP 5584 on handy form, pages 2 and 3.

Pickling process protects rolled steel

Eight-page informative booklet describes process of pickling rolled steel plates, channels, and other forms in sulfuric acid and phosphoric acid. After first pickling in sulfuric, iron is rinsed and dipped in phosphoric. Phosphates formed on the surface are reported to give a better bond with paint and increase life. Many illustrations are included. "The Phoscote Process" is issued by Chicago Bridge & Iron Co., Dept. CP, 332 S. Michigan Ave., Chicago 4, Ill. When inquiring specify CP 5585 on handy form, pages 2 and 3.

Lists research in progress

Paper bound, 244-page book reviews engineering research on more than 5,200 projects representing annual expenditure of over \$50 million. Publication is completely indexed by subject.

Ninety-one colleges and universities are represented in this volume. Under each listing, address, officers, policies, personnel (showing breakdown), expenditures, and current research projects are given. Listings on projects and personnel are complete as of March 1, 1951. To obtain "Review of Current Research", remit \$2.25 direct to Engineering College Research Council, Dept. CP, Rm. 7-204, 77 Massachusetts Ave., Cambridge 39, Mass. When inquiring specify CP 5586 on handy form, pages 2 and 3.



Textile processors will recognize this unique belt as part of a Bale Breaker . . . the device that rips apart bales of raw fibre for processing. Heretofore, it has consisted of a series of steel spikes mounted on canvas belting. However, the spikes often strike stones, bits of metal or other foreign objects inside the bale, causing sparks that ignite flash fires that burn the belt itself.

Cambridge design engineers solved this problem by attaching metal spikes to a standard woven wire conveyor belt. Results: fewer fires because Monel metal spikes reduce sparking, no belt damage or repairs when fires do occur, water from sprinklers will not harm the belt, longer belt life from all-metal construction.

This is a typical example of the many unusual or difficult problems solved by the use of Cambridge woven wire conveyor belts. Cambridge belts can be constructed from any metal or alloy in a wide range of open or closed weaves. For any problem of combining product movement with processing through heat, cold or corrosive agents, rely on the experienced advice of your Cambridge Field Engineer. Write direct or see "Belting-Mechanical" in your Classified Telephone Directory.

FREE CATALOG gives belt specifications, construction features, engineering data and conveyor design for many plants including food, ceramic, chemical, metal-working and others. **WRITE TODAY FOR YOUR COPY** of this valuable reference.



The Cambridge Wire Cloth Co.
Dept. F • Cambridge 7, Md.



When inquiring check CP 5587
on handy form, pgs. 2-3

CHEMICAL PROCESSING

NEW LITERATURE

Summarizes measures of defense production

A need expressed by businessmen for a compact roundup of official actions taken by Defense Production Administration and related defense agencies is now being filled by a weekly bulletin entitled "Defense Production Record". Issued by DPA, it provides a concise record of orders, regulations, and recommendations of industry advisory committees and other activities of Government defense production agencies, and interprets and explains the need for and purpose of such actions.

Copies can be obtained from the Superintendent of Documents, Government Printing Office at an annual subscription rate of \$2.50 or at a single copy rate of 5 cents each.

Output speeds to 330 rpm from speed reducers

Twelve-page, 3-color bulletin describes and illustrates single reduction speed reducers. Output speeds range from 115 to 330 rpm; capacities range to 27 hp. Bulletin A602B is issued by Dodge Manufacturing Corporation, Dept. CP, Mishawaka, Ind. When inquiring specify CP 5588 on handy form, pages 2 and 3.

How to efficiently use pipe and bolt tools

Guide to assure best possible results from pipe and bolt tools contains 31 different operations in its 4 pages. "Operating Guide" is issued by Beaver Pipe Tools, Inc., Dept. CP, 334 Dana Ave., Warren, O. When inquiring specify CP 5589 on handy form, pages 2 and 3.

Shows power mixers

Illustrated bulletin gives details on complete line of power mixers. Drum drive consists of transmission, fluid drive coupling, and single-strand chain. Drum rollers are drop-forged and flame-hardened. Track is shrunk over pads welded to drum to eliminate cracking.

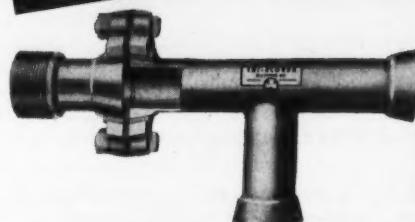
Bulletin 51-28 is issued by Chain Belt Company, Dept. CP, 1600 W. Bruce St., Milwaukee 4, Wis. When inquiring specify CP 5590 on handy form, pages 2 and 3.

For more information on product at right, specify CP 5591 . . . see information request blank between pages 2-3.



"ZEPHYRWELD"® WELDING FITTINGS . . . SS Type 304, 347 and 316—Inconel and other SS analyses. Fabricated in O.D. Tube Size, $\frac{1}{2}$ in. thru 24 in.—ells, tees, adapters, etc. Covered in Catalog 748.

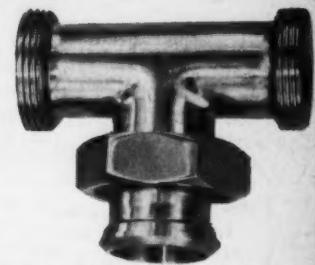
SCHEDULE 5S AND 10S WELDING FITTINGS . . . "Zephyrweld" SS Type 304, 347 and 316, full range of sizes from $\frac{1}{2}$ in. thru 24 in. pipe, for use with Stainless light gauge pipe. Covered in Catalog 1051.



CONICAL END FITTINGS . . . Stainless Type 316 — Inconel and other SS analyses. Complete line, sizes from 1 in. thru 4 in. O.D. Features: Light weight — low cost — fast installation — leak-tight — easily adapted to other fitting types. Covered in Catalog 848.



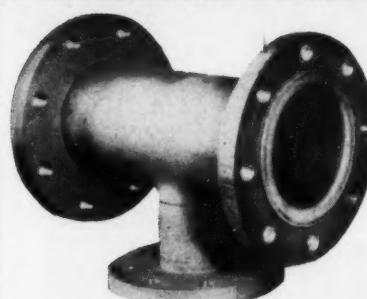
RECESSED-END FITTINGS . . . Stainless Type 304-347-316. Low cost, light weight fittings for fast, simple soldering, brazing or socket welding. Sizes from $\frac{1}{2}$ in. thru 24 in. Full line of elbows, tees, adapters, etc. Covered in Catalog 948.



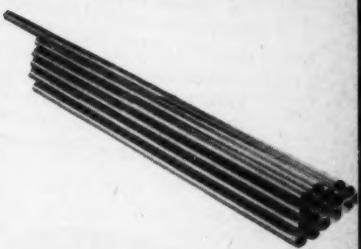
SANITARY TYPE FITTINGS . . . Stainless Steel and Tri-Alloy (Nickel Alloy), from 1 in. thru 4 in. O.D., full range of fitting types. Approved meeting 3A Standards throughout, incorporating exclusive design features. Covered in Catalog 150-1.



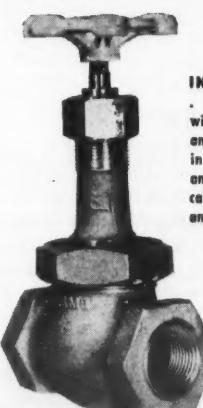
SCREWED FITTINGS . . . Stainless Steel Type 304-347-316. Complete range of fitting types. Meets the demand wherever flanged and screwed fittings are required. Clean-cut, accurate I.P.S. threads. Covered in Catalog 451.



PREFABRICATED FITTINGS . . . such as this butt-welded, flanged assembly, available in a wide range of types and sizes to meet special requirements.



STAINLESS STEEL TUBING AND PIPE . . . a most complete line, in all popular stainless analyses, wide size range, polished or unpolished.



INDUSTRIAL VALVES . . . Tri-Clover offers a wide selection of standard and special design valves in a wide range of types and sizes to meet practically every corrosion-resistant requirement.



NEW PUMP CATALOG 250 . . . contains complete pump data never before published — covers the full 1951 Tri-Clover Pump Line for every application. Write for your copy now.

Here you see representative fittings, valves, pumps, tubing and pipe that go to make up the *complete* Tri-Clover line—all available from one source. Install these stainless steel or alloy products in your process line and realize the advantages of increased production and lower maintenance cost. 32 years of specialized experience in solving corrosion piping problems can be yours by consulting our engineers.

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PUMPS, TUBING, SPECIALTIES

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INDUSTRIAL FITTINGS AND
INDUSTRIAL PUMPS

THE Complete LINE

Corrective Maintenance

You'll stop trouble before trouble starts with these industrial fluid drives. For they eliminate—entirely—many, many causes for periodic maintenance, repair or breakdowns.

These Twin Disc Fluid Drives, for example, help you:

1. **Avoid Starting Stalls:** Motor or engine quickly reaches efficient operating speed under light load . . . then picks up full load smoothly and with rapid acceleration.

2. **Cushion Shock-Impact Loads:** The hydraulic cushion protects both driving and driven units against failure due to shock-impact loads.

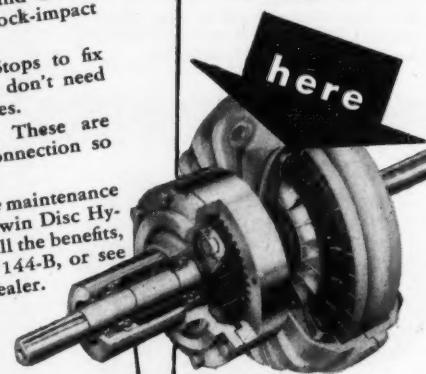
3. **Avoid Overload Breakage:** Stops to fix shear pins are eliminated. You don't need such "break-and-replace" devices.

4. **Avoid Torsional Vibrations:** These are damped out by the fluid connection so that power applied is smooth!

These are only four corrective maintenance advantages you secure with Twin Disc Hydraulic Coupling Drives. For all the benefits, write today for Bulletin No. 144-B, or see your Twin Disc Hydraulic Dealer.



HYDRO-SHEAVE* DRIVE
¾ hp to 40 hp
Complete package, slides right on shaft



HYDRO-WYND* DRIVE
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DOUBLE-CIRCUIT HYDRAULIC COUPLING
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When inquiring check CP 5592 on handy form, pgs. 2-3

NEW LITERATURE

Fundamental paint info given

Surveying manufacture of paint from raw materials to the finished product, this 157-page book is designed to acquaint the beginner with industrial methods. Basic paint constituents are critically studied; pigments and extenders, application and testing of finishes, and paint manufacturing equipment are treated. Book is written by members of the Oil & Color Chemicals' Assn.

To obtain "An Introduction to Paint Technology," remit \$3.25 direct to The Chemical Publishing Co., Inc., Dept. CP, 212 Fifth Ave., New York 10, N. Y. When inquiring specify CP 5593 on handy form, pages 2 and 3.

Advanced organic chemistry in second edition

Work is a one-volume reference-text designed for practicing organic chemists, advanced students and others needing reference material beyond the scope of basic studies in this field. Compiled from many sources, especially foreign texts, book gives extensive references for the specific points raised.

Second edition shows several changes in organization, more complete references, a new indexing method similar to that of Chemical Abstracts, and major additions and revisions of material. The rapid advance in the heterocyclic and aliphatic fields has been recorded. Nearly three-fourths of the work is devoted to aliphatic and alicyclic chemistry, and heterocyclic compounds are given special attention.

Book does not stress analytical and physical principles, historical material, coal tar distillation chemistry, or detailed study of the sex hormones. However, references for most of this material are given.

Part I, dealing with aliphatic compounds, contains 516 pages; part II, alicyclic, 77 pages; part III, aromatics, 130 pages; part IV, heterocyclic, 58; and, part V, organophosphorus and organometallic compounds, 20 pages. To obtain this 1005-page book, "Organic Chemistry," by Frank C. Whitmore, remit \$12.00 direct to D. Van Nostrand Company, Inc., Dept. CP, 250 Fourth Ave., New York, N. Y. When inquiring specify CP 5594 on handy form, pages 2 and 3.

Delayed coking brochure illustrates installation

Installation of delayed coking equipment of southern oil refinery is shown in 18 photographs. Data are given for process in general and for construction of this installation. Twenty-page "New Horizons" is issued by The Lummus Co., Dept. CP, 385 Madison Ave., New York 17, N. Y. When inquiring specify CP 5595 on handy form, pages 2 and 3.

Over 500 preparations given

More than 500 organic intermediates are covered in 328-page book. All compounds listed are either 1) commercially unavailable, or, 2) unduly expensive. Compounds include 2 types; those having useful functional groups or properties, and those whose preparation may be used as a reaction type. Stressing this point, the book is indexed according to subject, formula, and reaction type.

All starting materials are either commercially available or reference is made to a method of preparation. Methods given in this volume are detailed, giving yield data, etc.

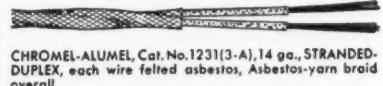
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The precision quality of Gordon Thermocouple Extension Lead Wire is the result of continued experience since 1915 in careful selection and inspection that meets rigid insulation requirements and Bureau of Standards specifications.

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IRON-CONSTANTAN, Cat. No. 1236-C, 14 ga., STRANDED-DUPLEX, each wire felted asbestos, Asbestos-yarn braid overall.



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When inquiring check CP 5596
on handy form, pgs. 2-3

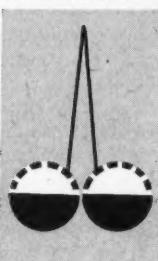
CHEMICAL PROCESSING



BEE-ZEE ROUND ROD SCREENS HAVE **EXTRA LIVES!**

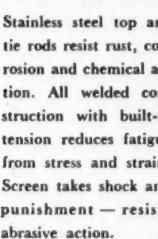
Make more money with Bee-Zee Screens! On any type of processing work, Bee-Zee Round Rod Screens last longer . . . and here's why:

SCREENS STAY ACCURATE



Exclusive Bee-Zee round rod design means that top rods can wear halfway through without enlarging screen opening. Fine point of contact between round top and tie rods offers no "pockets" for blinding or clogging—allows faster deliquifying.

SCREENS RESIST CORROSION



Stainless steel top and tie rods resist rust, corrosion and chemical action. All welded construction with built-in tension reduces fatigue from stress and strain. Screen takes shock and punishment—resists abrasive action.



WRITE FOR FREE CATALOG explaining all the money-making features of Bee-Zee Round Rod Screens and their use in chemical processing work. No cost or obligation.

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ENGINEERING COMPANY

Bee-Zee Screens can be fitted to
any chemical processing equipment.
770 ABINGDON ST. GALESBURG, ILL.

When inquiring check CP 5597
on handy form, pgs. 2-3

NEW LITERATURE

In all cases the source of the method shown is given as reference. To obtain "Preparation of Organic Intermediates," by Shirley, remit \$6.00 direct to John Wiley & Sons, Inc., Dept. CP, 440 Fourth Ave., New York 16, N. Y. When inquiring specify CP 5598 on handy form, pages 2 and 3.

Reports on alloy castings

Two six-page bulletins show and describe a broad range of component machine parts and assemblies produced by centrifugal casting. Bulletin 150 covers parts of non-ferrous metals including all the bronzes, monel metal, nickel, aluminum and special alloys. Bulletin 151 features parts of Meehanite metal, Ni-resist, and special iron alloys. These publications outline the physical characteristics of centrifugally cast parts and indicate whether or not they are applicable to specific jobs. Issued by Centrifugal Castings Div., Shenango-Penn Mold Co., Dept. CP, Dover, O. When inquiring specify CP 5599 on handy form, pages 2 and 3.

Liquid processing bulletin shows all equipment

Three-color, 32-page bulletin shows stainless steel filters, mixers, tanks and pumps for use in process work. Asbestos disc filter is featured and an actual sample of the material is included in the catalog. Photographs, drawings, and graphs make every phase of the equipment clear. Issued by Alsop Engineering Corp., Dept. CP, 510 Randall St., Milldale, Conn. When inquiring specify CP 5600 on handy form, pages 2 and 3.

Research facilities described

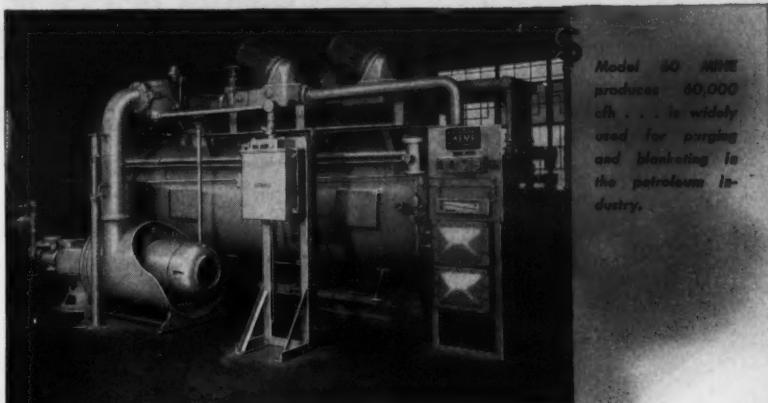
Facilities for research on present and future products at the East St. Louis Research Laboratories are described in 14-page booklet. Serving a variety of industries, laboratory is equipped to work in ceramics, refractories, abrasives, drugs, papers, pigments, rubber goods, laundry chemicals, and other specialties. Booklet is issued by Aluminum Company of America, Dept. CP, 680 Gulf Bldg., Pittsburgh 19, Pa. When inquiring specify CP 5601 on handy form, pages 2 and 3.

Demonstrates dry blender with photographs

Four-page, three-color publication shows, by a sequence of photographs, the blending of cabbage seeds and sodium bicarbonate in a transparent model of the blender. List of 28 general applications is given. Component parts are shown, and operation of the unit is explained. Catalog section 402 is issued by Patterson-Kelley Co., Inc., Dept. CP, 346 Lackawanna Ave., East Stroudsburg, Pa. When inquiring specify CP 5602 on handy form, pages 2 and 3.

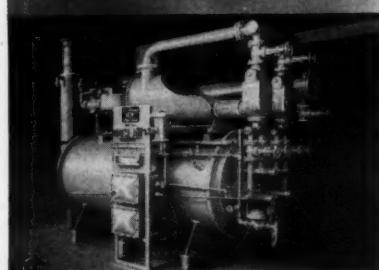
Full line of spray nozzles described, classified

Many operations involving the use of nozzles of all sizes are treated in 20-page bulletin. Operating characteristics and some installation data are given for spray ponds, cooling towers, air scrubbers, etc. Bulletin N-617 is issued by Yarnall-Waring Co., Dept. CP, Mermaid Lane, Philadelphia 18, Pa. When inquiring specify CP 5603 on handy form, pages 2 and 3.

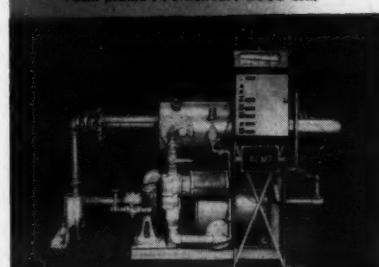


Model 50 MHF produces 60,000 cfm . . . is widely used for pumping and blanketing in the petroleum industry.

Why Pay Premium Prices For Inerts?



Model 6 MHF is ideal for agitating, bubbling and blanketing in synthetic resin plants . . . delivers 6000 cfm.



Model 1 MHF offers all the features of larger equipment . . . delivers 1000 cfm . . . is fully automatic.

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No matter what the demand, Kemp Inert Gas Generators give you the same analysis Inert Gas from 20% to 100% of capacity. The Kemp Industrial Carburetor, part of each installation, burns ordinary gas just as it comes from the mains. Assures complete combustion without "tinkering." Produces a clean, chemically inert gas to meet your most exacting requirements.

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Whatever your requirements, always specify Kemp. To find out how you can benefit: Tell us your atmosphere gas problem, and we'll show you how Kemp can solve it and save you money!

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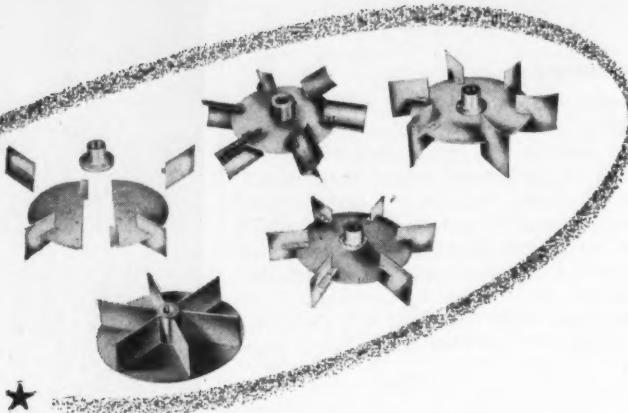
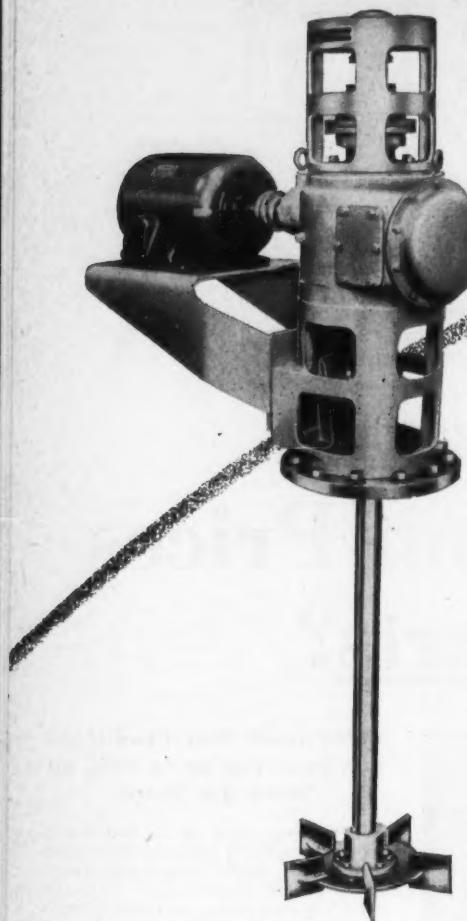
INERT GAS GENERATORS

Write for Bulletin I-10 for technical information.
C. M. KEMP COMPANY,
405 E. Oliver St., Baltimore 2, Md.

When inquiring check CP 5604 on handy form, pgs. 2-3

Lightnin® Mixers

MIXCO® Engineered



For Fluid Agitation that does what you want it to do

Flexibility—the kind that saves you money and helps you get good processing results—is built into Lightnin Mixers.

One example of this is the Lightnin impeller. Sizes and shapes are standard—with *known* flow pattern and power response.

As blades are added, the power requirement increases, stepwise, in a *known* quantity.

This means that Mixco engineers can *accurately predict* what your process results will be. It also permits accurate *sizing* of the mixer—big enough to do the job without overloading, small enough to keep your horsepower requirements at a minimum.

The impellers on Lightnin Mixers are made of standard, interchangeable parts. Blades can be added, changed, replaced without going to the expense of a new impeller. This cuts upkeep and gives you *flexibility* to meet future changes in process requirements.

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- B-78 Top Entering Mixers B-36 Condensed Catalog showing complete line
- B-89 Top Entering Mixers (Turbine and Paddle Type) B-75 Portable Mixers (Electric and Air Driven)

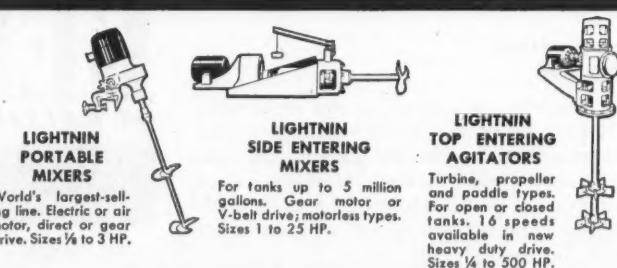
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A COMPLETE LINE . . . UNEXCELLED TECHNOLOGY

NEW LITERATURE

Offers color codes, data on thermocouples, wires

Showing calibration symbols and color codes for thermocouples and extension wires, 8½ x 5½" chart also contains resistance tables, other general data. Thermocouple data chart is issued by Thermo Electric Co., Inc., Dept. CP, Fair Lawn, N. J. When inquiring specify CP 5605 on handy form, pages 2 and 3.

For motor control

Ninety-two-page catalog, "Motor Control", is issued on letterhead request to Allen-Bradley Company, Dept. CP, Milwaukee, Wis.

Contains salient data on dilinoleic acid

Sixteen-page booklet on dilinoleic acid contains complete description, characteristics, specifications, shipping and handling data, and potential applications in soaps, greases, esters, insecticides, and emulsion breakers. Other uses are indicated.

"955 Dimer Acid" is issued by Emery Industries, Inc., Dept. CP, Carew Tower, Cincinnati 2, O. When inquiring specify CP 5606 on handy form, pages 2 and 3.

Discusses the synthesis of aliphatic organics

Including a summary of theoretical and applied contact catalysis, 610-page book reviews data on synthesizing aliphatic organic compounds by the catalytic hydrogenation of carbon monoxide. To obtain "The Fischer-Tropsch and Related Syntheses", remit \$9 direct to John Wiley & Sons, Inc., Dept. CP, 440 Fourth Ave., New York 16, N. Y.

Changing primary elements alters recorder's uses

Two-page bulletin details direct-writing instrument designed for inkless recording of electrical unbalance of a resistance bridge using strain-sensitive or temperature-sensitive elements. Performance, operation, and accessories are listed in Bulletin 332, issued by Baldwin-Lima-Hamilton Corporation, Dept. CP, Philadelphia 42, Pa. When inquiring specify CP 5607 on handy form, pages 2 and 3.

For more information on product at left, specify CP 5608 . . . see information request blank between pages 2-3.

NEW LITERATURE

Nozzle design lessens backfiring

Flame-retaining nozzle has been combined with a long sweep elbow to form a single unit. Advantages include lower manifold pressure without backfiring, and use for blast firing into open ports of furnaces with a negative draft. Single-page catalog 804B is issued by Hauck Manufacturing Co., Dept. CP, 124-136 Tenth St., Brooklyn 15, N. Y. When inquiring specify CP 5609 on handy form, pages 2 and 3.

Booklet shows finishes to meet government specifications

Sixteen suggested formulations to meet US Government paint specifications are offered in 32-page booklet. Formulations cover: Federal Specification TT-E-485B, a rust-inhibiting olive drab enamel for drums and other metal products; TT-E-489, a synthetic gloss enamel for exterior and interior surfaces; TT-E-506B, an interior gloss enamel, white or with tints; TT-E-508, a semi-gloss interior enamel, white or with tints; TT-P-636, a synthetic primer for ferrous metal and wood surfaces; TT-R-266, alkyd resin solutions.

Also, Quartermaster Corps Tentative Specification OQMG No. 167, protective interior lacquers for steel container for fuel and lubricants; JAN-P-72, a lacquer-resisting synthetic primer; JAN-E-480, a phenol or urea formaldehyde baking enamel; MIL-E-5557, a black heat-resistant glyceryl phthalate enamel; MIL-P-6889A, a zinc chromate primer for aircraft use; MIL-V-6894, a glyceryl phthalate spar varnish; MIL-S-10181 (Ord), a lacquer type sanding surfacer; MIL-E-15090, a light gray equipment enamel (Formula III), Amendment 1; Bureau of Ordnance Specification 52-E-13 (Ord), a rapid drying semi-gloss enamel; and, Bureau of Aeronautics Specification 52-L-26 (Aer.), a low water-sensitivity cellulose nitrate lacquer. 8½" x 11" bound booklet is issued to paint manufacturers and technologists by The Resinous Products Div., Rohm & Haas Company, Dept. CP, Washington Sq., Philadelphia 5, Pa. When inquiring specify CP 5610 on handy form, pages 2 and 3.

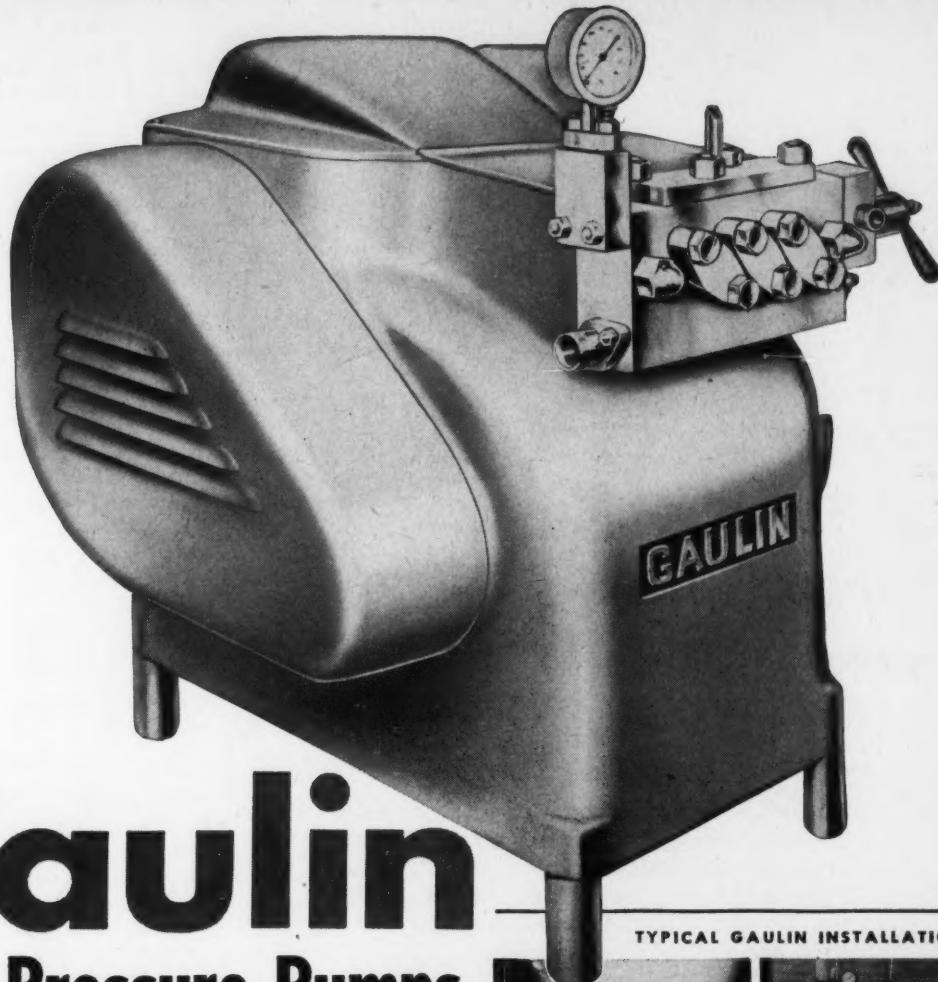
Standard heat sealing unit featured in bulletin

Eight-page bulletin gives detailed specifications of several heat sealers. Seven photographs illustrate various models. "Electronic Heating" is issued by Progressive Electronics Co., Inc., Dept. CP, 130 Eighth St., Passaic, N. J. When inquiring specify CP 5611 on handy form, pages 2 and 3.

Details cyanoacetamide, an intermediate

Technical bulletin on cyanoacetamide contains properties, specifications, suggested applications, and a synopsis of work reported in the literature. This compound is an organic intermediate, particularly important in the pharmaceutical field. It is used in the synthesis of B-complex vitamins and barbiturates, and can be used in the syntheses of a number of pyridine derivatives. Essentially, the bulletin is for the purpose of furthering long range development; at present, cyanoacetamide is in short supply.

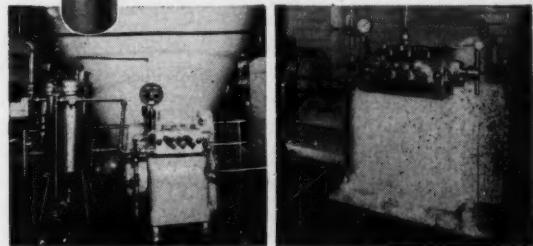
Cyanoacetamide bulletin is issued by Kay-Fries Chemicals, Inc., Dept. CP, 180 Madison Ave., New York 16, N. Y. When inquiring specify CP 5612 on handy form, pages 2 and 3.



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Keep Materials Flowing
IN THE PROCESS
INDUSTRIES

TYPICAL GAULIN INSTALLATIONS



If you want to increase production and cut costs in your processes, then it will pay you to use Gaulin High Pressure Pumps. These rugged, dependable pumps keep materials flowing day in, day out with practically no maintenance expense.

They are available in capacities from 75 to 4000 gallons per hour and operating pressures up to 15,000 lbs. per sq. in. — a size to meet every requirement. All operating parts are designed and built to give maximum performance regardless of operating conditions. Special applications requiring specific metals and types of packing are constructed to meet individual requirements.

It will pay you to investigate and use Gaulin High Pressure Pumps. Write for information, today.



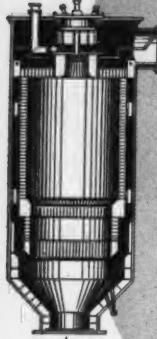
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When inquiring check CP 5613 on handy form, pgs. 2-3



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100,000,000 BTU/hr. of hot gases at any
pressure up to and above 250 lbs./sq. inch?

The use of pressure firing to speed processing is not new but — today, more and more "trouble-shooting" engineers are adopting Peabody Direct Fired Air Heaters to speed, refine, and — sometimes — actually save their process, product or plant!

Here's why — Peabody Direct Fired Air Heaters are *compact, adaptable, flexible* (over a wide operating range) and each one is custom-engineered to your job specifications! Peabody units with exit temperatures between 200 and 2000 F. are used for spray drying of detergents, food products, and chemicals for tunnel drying, fume abatement, catalytic petroleum refining, rotary drying, and many, many other applications of vital importance to industrial leaders. An opportunity to help on your problem will be sincerely welcomed.

PEABODY
ENGINEERING CORPORATION
580 FIFTH AVENUE • NEW YORK 19, N.Y.
Manufacturers of all types of combustion equipment, direct-fired air heaters, gas scrubbers, coolers, and absorbers.

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PEABODY LIMITED • LONDON, S.W.1, ENGLAND

760

* Write for Bulletin 600-B

When inquiring check CP 5614 on handy form, pgs. 2-3

NEW LITERATURE

Over 30 laboratory items shown and described

Laboratory equipment is described and illustrated in 28-page catalog. Numbering over 30, items include clamps; pail and dipper for corrosives; miniature pumps; thermometers; glass condensers; and adapters with metal coils.

"What's New for the Laboratory", 12th edition, is issued by Scientific Glass Apparatus Co., Inc., Dept. CP, 49 Ackerman St., Bloomfield, N. J. When inquiring specify CP 5615 on handy form, pages 2 and 3.

Compressed air cleaned of contaminants

Two-page illustrated bulletin describes unit for cleaning large volumes of compressed air and other gases contaminated with water, free oil, water-oil emulsions, and dirt. Bulletin SC-10.11 is issued by Selas Corporation of America, Dept. CP, Philadelphia 34, Pa. When inquiring specify CP 5616 on handy form, pages 2 and 3.

Gives sources of info on hexachlorophene

Bibliography on hexachlorophene contains references and abstracts of some 51 scientific and trade articles and abstracts of 19 patents. Bibliography is indexed as to type of information desired — properties, uses, etc.

Major application is as a germicide in the presence of soap and synthetic detergents. Technical Bulletin H-1 is issued by Sindar Corporation, Dept. CP, 330 W. 42nd St., New York 18, N. Y. When inquiring specify CP 5617 on handy form, pages 2 and 3.

Wooden door uses minimum space

Detailed descriptions with illustrations and specifications for rolling wooden doors are given in 4-page bulletin. Doors are reported to have long life and good space economy. Issued by The Kinnear Manufacturing Co., Dept. CP, Columbus 16, O. When inquiring specify CP 5618 on handy form, pages 2 and 3.

For pressure vessels

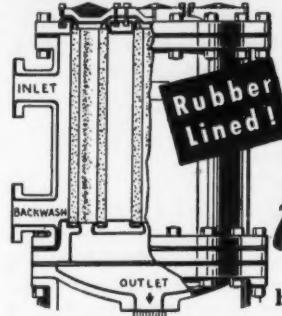
Of interest to those in pressure vessel work, 119-page catalog describes and illustrates nozzles, welding necks, and large diameter flanges. Items are indexed and thoroughly specified.

Data on flange design fills 44 pages.

Get Crystal Clear FILTERING of Corrosive Acids



Cut Filtering Costs with



ADAMS PORO-STONE FILTERS

1 Easy cleaning, without dismantling, by simple backwashing.

2 Safe — eliminates toxic fumes and workers' contact with dangerous acids.

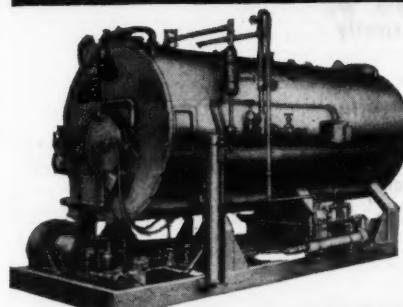
3 Filter shells — rubber or lead lined. Filter tubes inert to acids or alkalies.

Write for Bulletin 9348

R. P. ADAMS CO., Inc. 243 E. PARK DRIVE BUFFALO 17, N. Y.

When inquiring check CP 5619 on handy form, pgs. 2-3

MODERNIZE with the AMESTEAM GENERATOR



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ARE THE
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- COMPLETE
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10 to 500 h. p. —

15 to 200 lbs. capacities



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BOX 607 OSWEGO, N. Y.

Builders of Better Boilers since 1848

Manufactured under

License in Canada by VOLCANO, Ltd., Montreal, P. Q.

When inquiring check CP 5620 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Send for Nicholson

TRAP CATALOG 751

A Standard Reference on
Traps for All Applications



Newly revised, this 32-page reference describes traps for all mediums and pressures: thermostatic and metal expansion for pressures to 225 lbs.; weight and piston-operated for heavy duty. Complete with installation



TRAP DATA at your fingertips

diagrams and
formulae for
determining
proper size
trap.

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WILKES-BARRE, PA.
Sales and Engineering Offices in 53 Principal Cities

When inquiring check CP 5621 on handy form, pgs. 2-3

NEW LITERATURE

Also included are standards of the Tubular Equipment Manufacturers Association, ASA temperature-pressure ratings, and ring weights.

Catalog 501 is issued by Taylor Forge & Pipe Works, Dept. CP, P.O. Box 485, Chicago 90, Ill. When inquiring specify CP 5623 on handy form, pages 2 and 3.

Fire fighter's manual is well illustrated

Containing over 300 photographs, 176-page book gives step by step methods of fighting fires.

Pocket sized civil defense edition is intended for training along lines suggested by The Joint Committee on Evolutions, representing The Fireman's Training Committee of The National Fire Protective Assn., The Fire Department Instructors Conference, and The International Assn. of Fire Chiefs.

To obtain "Handling Hose and Ladders", remit \$1.50 direct to Publications Service Dept., National Fire Protective Assn., Dept. CP, 60 Batterymarch St., Boston 10, Mass. When inquiring specify CP 5624 on handy form, pages 2 and 3.

Ceramics gum uses

Leaflet describes uses of cellulose gum in the ceramics industry. CMC Leaflet is issued by Hercules Powder Co., Dept. CP, Wilmington, Del. When inquiring specify CP 5625 on handy form, pages 2 and 3.

Shows speed changers with low backlash

Two-page data sheet presents speed changers for applications where backlash between high and low speed shafts must be very low, and where ample input torque is available to overcome increased losses and roughness inherent with preloaded gearing.

Technical Data Sheet 7, Pages 1 and 2, is issued by Metron Instrument Company, Dept. CP, 432 Lincoln St., Denver 9, Colo. When inquiring specify CP 5626 on handy form, pages 2 and 3.

How to protect factories

"Plant Protection for National Defense" is issued by Detex Watchclock Corporation, Dept. CP, 76 Varick St., New York 13, N. Y. When inquiring specify CP 5627 on handy form, pages 2 and 3.

FOR LOWER MAINTENANCE AND PROCESSING COSTS

Most manufacturers recognize the great importance of dust control in reducing processing and maintenance costs in their operations. What they may not realize is that the operating efficiency of dust control systems is determined completely by the engineering "know-how" which builds into these systems all factors vital to high-efficiency operation.

DRACCO engineering and DRACCO DUST CONTROL SYSTEMS have been successfully solving dust control problems for many years—removing hazardous dust in some installations, recovering valuable materials in others—but in all instances providing high efficiency DUST CONTROL SYSTEMS to meet the specific operating requirements of the installation.

When you think of dust control, think of DRACCO—the Name, the engineering skill, and the dust control system that will successfully solve your dust control problems.

DRACCO engineers will gladly provide you with complete data on high-efficiency DRACCO equipment as applied to your specific problem. Simply write to



DRACCO CORPORATION

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415 Lexington Avenue, New York 17, N. Y.

AGENTS IN PRINCIPAL CITIES

DRACCO *Performance Proved*
DUST CONTROL EQUIPMENT
PNEUMATIC CONVEYORS • METAL FABRICATION

When inquiring check CP 5628 on handy form, pgs. 2-3

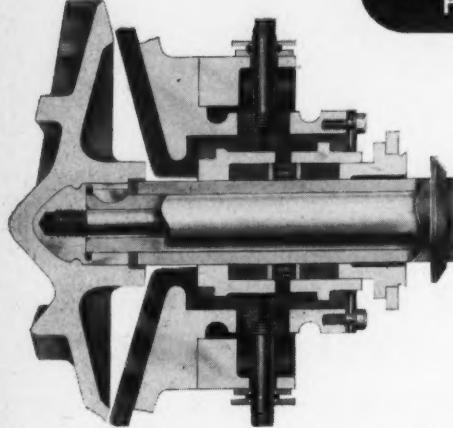
WELD WITH
ARCOS
SPECIALISTS IN STAINLESS, LOW HYDROGEN AND NON-FERROUS ELECTRODES

When inquiring check CP 5622 on handy form, pgs. 2-3

OLIVITE

Acid-Handling Pump

How It Answers the Problem of Leakage



- 1 The stuffing box floats on two rubber rings which permits shaft and packing movement. The packing is not crushed nor is the replaceable shaft sleeve scored.
- 2 The lantern ring permits circulation of the lubricant, water, solution, or grease.
- 3 The resilient packing is of acid-resisting material styled for long life.
- 4 Simple spring loaded wing nut adjustment permits application of correct and proper pressure by the yoke on the gland and packing. No "monkey" wrench required.

Thousands of Olivite Acid-Resisting pumps have been supplied the Process Industries during the past 20 odd years. The values of these years of design, manufacturing and operating experience are embodied in every 1½", 2" or 4" Olivite Pump you purchase. Bulletin 308-R provides full details. When writing us please outline your pumping problems.

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AUSTRALIA
Robert Duff Pty., Ltd.
Melbourne

SOUTH AFRICA
E. L. Bateman, Pty., Ltd.
Johannesburg, Transvaal

When inquiring check CP 5629 on handy form, pgs. 2-3

NEW LITERATURE

Covers properties, forms of 2 stainless steels

Eighteen-page booklet describes properties, available forms, and fabrication of 2 stainless steels. These grades combine excellent corrosion resistance with strength, hardness, and good fabricating characteristics. They can be hardened at low temps.

"Precipitation-hardening Stainless Steel" is issued by Armco Steel Corporation, Dept. CP, Middletown, O. When inquiring specify CP 5630 on handy form, pages 2 and 3.

Presents optical parts

Listing lenses, prisms, reflectors, and other optical parts, 16-page, 2-color Catalog L-117 is issued on letterhead request to Bausch & Lomb Optical Co., Dept. CP, Rochester 2, N. Y.

Series of meters log combustion

Four-page, 2-color bulletin covers theory, operation, installation, and available models of combustion meters. Bulletin 51-553 is issued by Hays Corp., Dept. CP, Michigan City, Ind. When inquiring specify CP 5631 on handy form, pages 2 and 3.

Third edition of manual gives late weld info

Latest developments are given in 3rd edition of 50-page "Manual of Welding Engineering and Design", issued by Eutectic Welding Alloys Corporation, Dept. CP, 40-40 172nd St., Flushing, N. Y. When inquiring specify CP 5632 on handy form, pages 2 and 3.

Alloy data available

"A. C. I. Standard Designations and Chemical Composition Ranges for Heat and Corrosion Resistant Castings" is issued by Alloy Casting Institute, Dept. CP, 32 Third Ave., Mineola, N. Y. When inquiring specify CP 5633 on handy form, pages 2 and 3.

Various laboratory items presented in bulletin

Sixteen-page bulletin describes items of laboratory equipment. Included are portable autoclaves, midget refrigerators, vacuum control manostats, motor-driven blenders, flowmeters, flash evaporators for heat-sensitive solutions, stainless steel filters and needle

Research Spray Dryer



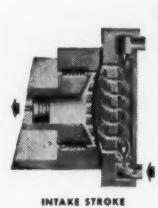
for
PILOT PLANT
and **LABORATORY**
OPERATIONS

**Ask for
Bulletin
D-106**

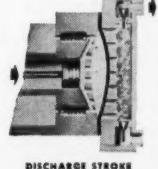
This new unit provides instant drying at low temperatures with close control of moisture content of the finished product. Recommended for all applications requiring small drying capacities, including high-value low-volume pharmaceuticals. Full information on request.

SWENSON EVAPORATOR CO.
Division of Whiting Corporation
15667 Lathrop Ave.
Harvey, Illinois

When inquiring check CP 5634 on handy form, pgs. 2-3



The **LAPP PULSAFEEDER**
principle of proportional
pumping combines advantages
of **PISTON** and **DIAPHRAGM**
design.



Reciprocating piston action—positive displacement. Diaphragm acts only as balanced, floating partition, isolates chemical being pumped. Pumping rate continuously variable while pump is in operation. Also available: Auto-Pneumatic Pulsafeeder with automatic-pumping-rate control, responsive to variable flow, pH, temperature, liquid level, pressure or other variables.



Lapp

PULSAFEEDER

PISTON-DIAPHRAGM CHEMICAL PROPORTIONING PUMP

WRITE for Bulletin 262 with complete description and specifications.
LAPP INSULATOR CO., INC., PROCESS EQUIPMENT DIVISION, 456 MAPLE STREET, LE ROY, N. Y.

When inquiring check CP 5635 on handy form, pgs. 2-3

CHEMICAL PROCESSING

How to save Labor and Money by Centralizing Lubrication

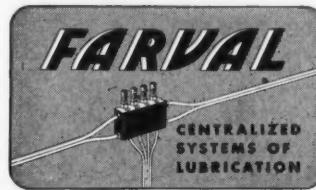
FOR more than 20 years, Farval has been saving manpower and money for users. Through efficient, dependable lubrication of machines and industrial equipment of all kinds, Farval saves 4 ways: It saves oiling labor, it saves lubricant, it reduces bearing expense, it eliminates down time.

The Farval System is a positive mechanical method of delivering oil or grease under pressure to a group of bearings from one Central Station, in exact quantities, as often as desired. It consists of a central pumping unit, two main supply lines and a measuring valve for each bearing.

Bulletin 25 gives you the facts and figures to apply to your own lubrication problems. The Farval Corporation, 3257 East 80th St., Cleveland 4, Ohio.



**Write for FREE
Bulletin 25**



When inquiring check CP 5636 on handy form, pgs. 2-3

JOHNSON Direct Differential Pressure . . .

Acting Solenoid Valve — for 150 lbs.

You can get a solenoid valve that operates under differential pressures up to 150 lbs., temperatures to 400°F, without pilot valves. It ends the time lag and wiredrawing that come with slow opening—the danger of sticking that comes with auxiliary pistons. It offers unusual possibilities for all types of automatic, or remote, flow control. Johnson Solenoid Valves are available for normally closed or normally open service; with stainless steel valve and seat or Jenkins disc; in sizes from $\frac{1}{2}$ " to 3".

Write for Bulletin "V"

WHERE CAN YOU USE THIS AUTOMATIC VALVE?

- No pilot valves
- Temperatures to 400°F.
- Differential Pressures to 150 lbs.
- Immediate full flow
- Heavy duty construction

Conveyor selection shown in bulletin

Eight-page publication shows which conveyor type is best suited to various process jobs. Bulletin W-1049 is issued by Maguire Machinery Co., Inc., Dept. CP, 60 East 42nd St., New York 17, N. Y. When inquiring specify CP 5642 on handy form, pages 2 & 3.

The Johnson Corporation

826 WOOD ST.

THREE RIVERS, MICHIGAN



When inquiring check CP 5637 on handy form, pgs. 2-3

JULY, 1951

NEW LITERATURE

valves, stopwatches, non-corrosive pumps, and various allied items.

Bulletin 515 is issued by Andrew Technical Service, Dept. CP, 3805 N. Clark St., Chicago 13, Ill. When inquiring specify CP 5638 on handy form, pages 2 and 3.

Booklet reviews wetting agents

Forty-eight-page book reviews ten surface active agents. Sections of the book are devoted to their specific use in various industries, including insecticide, leather, paper, rubber, sanitary chemicals, and textiles manufacture.

"Triton Surface Active Agents" is issued by Rohm & Haas Co., Dept. CP, Washington Sq., Philadelphia 5, Pa. When inquiring specify CP 5639 on handy form, pages 2 and 3.

Detailed info presented on N-bromosuccinimide

Forty-two-page book gives complete information on reactions and uses of N-bromosuccinimide. References number 282, with 76 reactions shown. Material is used in manufacture of hormones and vitamin D. Many special uses are suggested.

"NBS, Its Reactions and Uses" is issued on letterhead request to Arapahoe Chemicals, Inc., Dept. CP, Boulder, Colo. When inquiring specify CP 5640 on handy form, pages 2 and 3.

Gives data and uses of analog computers

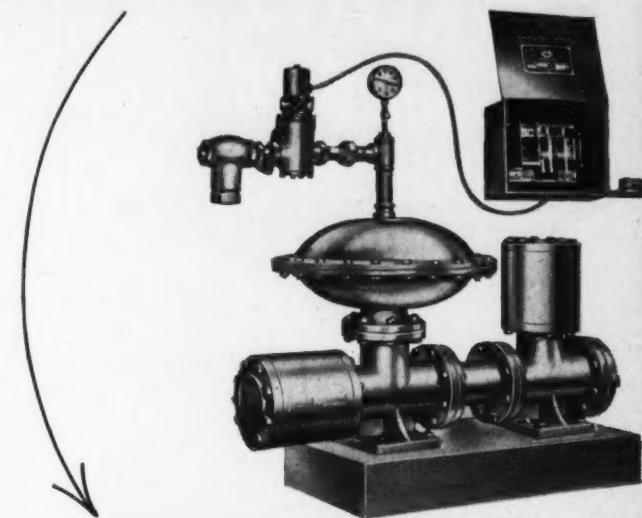
Electronic analog computers are treated in catalog-manual. Origin, development, applications, operating procedures, and choice of scale factors are among the subjects stressed. Components and their operating principles are listed. Catalog-manual on GAP/R Computers is issued by George A. Philbrick Researches, Inc., Dept. CP, 230 Congress St., Boston 10, Mass. When inquiring specify CP 5641 on handy form, pages 2 and 3.

Conveyor selection shown in bulletin

Eight-page publication shows which conveyor type is best suited to various process jobs. Bulletin W-1049 is issued by Maguire Machinery Co., Inc., Dept. CP, 60 East 42nd St., New York 17, N. Y. When inquiring specify CP 5642 on handy form, pages 2 & 3.

ODS

DIAPHRAGM PUMP



Announcing the 4 inch size!

THIS PUMP, recommended for handling clear chemical solutions as well as many different slurries, has a design capacity of 100 gpm (based on water) and is capable of operating against heads up to 200 feet. Feed sources can range up to 15 feet below the pump.

As with the smaller ODS Pumps, certain structural features are outstanding: (a) no linkage to the diaphragm which is a solid unpunched, unsloated, piece of flexible rubber or neoprene; (b) no stuf-

ping box or high speed moving parts. Three different types of valves are available: ball, flap or diaphragm.

Bulletin 309-R will give you full details of the full line of ODS Pumps which come in the following sizes: 1½, 1½A, 2, 2B, 3 and 4 inch. We have the Olivite Acid-Handling Centrifugal Pump in several sizes which might be better than our ODS Pump for your requirements, particularly if they involve highly corrosive solutions.

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When inquiring check CP 5643 on handy form, pgs. 2-3

Page 9

*Now
off the Press!*

BENEFITS from NEW HIGH SPEED MIXER

Homogeneous Mixing Now is Obtained in Faster Time . . . at Less Cost . . . with the "ENTOLETER" Mixer.

The "ENTOLETER" Mixer is a new-type centrifugal machine designed to provide thorough mixing and blending . . . in faster time . . . at reduced cost. In actual manufacturing operations in the chemical industries, this equipment is producing amazingly uniform mixtures, simply and economically.

Continuous Mixing

The "ENTOLETER" Mixer produces a finished mixture at rates up to 250 pounds per minute. Where ingredient percentages in a formula are sufficiently large to allow accurate metering, a truly continuous operation is achieved.

Adaptable to Batch System

The "ENTOLETER" Mixer is easily incorporated in the processing system as a final mixer. It serves to shorten mixing time, with consequent savings and appreciable improvement in product quality.

SEND TODAY FOR YOUR COPY OF THIS NEW, INFORMATIVE BULLETIN — ILLUSTRATING AND DESCRIBING SOME OF THE ADVANTAGES OF HIGH SPEED CENTRIFUGAL MIXING.

ENTOLETER DIVISION

The Safety Car Heating and Lighting Co., Inc.
1185 Dixwell Avenue, New Haven 4, Conn.

When inquiring check CP 5644 on handy form, pgs. 2-3

No Bags, Sheets, or Pads Are Used in All-Metal Filter

Units are designed for complete recovery of product and thorough cleaning

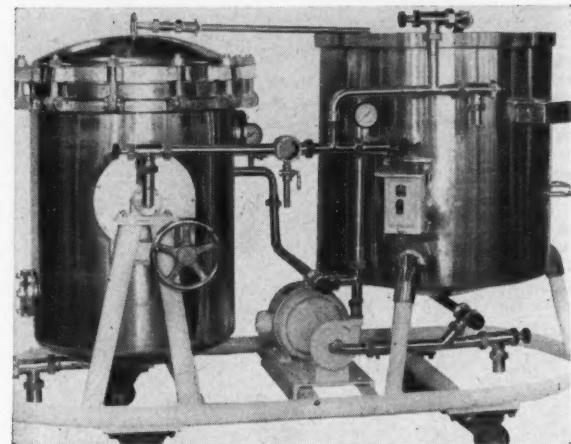
Uses: For filtering wide range of liquids that must be processed in chemical and plating industries.

Features: Longer self-prolonged filtration cycle; more thorough and easier cleaning and complete recovery of product; greater compactness. No cloth bags, sheets or paper pads are necessary. Self-locking tilting device permits quick tilting of filter tank, without effort, for complete product recovery and back-washing cycles.

Filter elements are easily removable individually, or as a unit. Clear view filtrate sight glass facilitates inspection of clarity, while inspection window permits observation of cleaning (backwashing) and development of filter cake.

Description: All-metal construction. Pressure type filter tank is fitted with a series of vertical reinforced metal filter elements of tubular design. In preparation for the filtering operation, elements are pre-coated by circulating filter powder with a small amount of product or water through filter and slurry tank.

Porosity of filter cake is maintained by addition of small amounts of filter powder to liquid being filtered. Added layers of filter mediums built up during the filter cycle maintain porosity of the filter cake. Area of final outside layer of medium is approximately twice that of first layer deposited, tending to maintain ability to remove contamination.



All-metal filter with easy-tilt filter tank

tion. This results in maximum length filter cycles before backwashing is required.

Filters are available providing filtering areas as follows: 6, 15, 30, 60, 90, 180 sq ft and embodying filter elements in following respective numbers: 13, 30, 30, 60, 89, 185. Filter tanks are normally built for 75 lb working pressure. When products are to be filtered under high temperatures, steam jacketed tanks and piping are available.

Source: Multi-purpose all metal filters are built by Groen Mfg. Co., Dept. CP, 4539 West Armitage Ave., Chicago 39, Ill. . . . or for more information check CP 5645 on handy form, pages 2 and 3.

Internally coated piping joined by welding type fittings, joints . . .

eliminates joint failures encountered because of vibration, expansion and contraction

Uses: For assembly of corrosion resistant coated piping with welding fittings and joints. These have been tested and approved for the following typical services: steam return condensate lines, salt water lines in the petroleum industry and piping applications in such industries as the chemical, pulp and paper, and in systems for handling industrial wastes and sewage, portable water and other installations where corrosion resistant piping is required.

Features: Heretofore, mechanical type joints have been the only types available for use with internally coated piping systems. Welded fittings eliminate failures that have been encountered at joints due to vibration, expansion and contraction. Welded piping offers lower cost and construction advantages.

When an installation is complete the interior of the pipe

and fitting is perfectly flush, fully coated with corrosion resistant material.

Turbulence, a prime cause of failure in many types of corrosion resistant piping, is eliminated because the welded fittings have an internal diameter identical with the pipe.

Description: Fittings and joints are available in all standard sizes and types from one-half inch up to thirty inches. The fittings and piping systems are coated or lined with corrosion resistant coatings in the manufacturer's plant. Any alterations which are necessary for field assembly can readily be made in the field.

A typical fitting has three parts, an internal sleeve and two external fittings. The joint fittings are welded to the pipe ends and both are then coated with corrosion resistant coating. Sleeve is then inserted into fittings which are then butted together and field welded. This welding, of course, destroys the coating both inside and outside the fitting for one-half inch on either side of the weld. On the outside, cold setting coating can easily be applied. Then, through a threaded opening in the fitting, a cold

setting compound is introduced into the interior of the fitting and the opening is sealed with a pipe plug.

Standard fittings in the various sizes include: concentric and eccentric reducers, 90° reducing elbows, lap joint stub ends, 45° elbows, straight tees, reducing outlet tees, 180° return bends and crosses.

Source: Corrosion-resistant coated welding fittings and joints are made by Welstrom, Dept. CP, Hamilton, Ohio . . . or for more information check CP 5646 on handy form, pages 2 and 3.

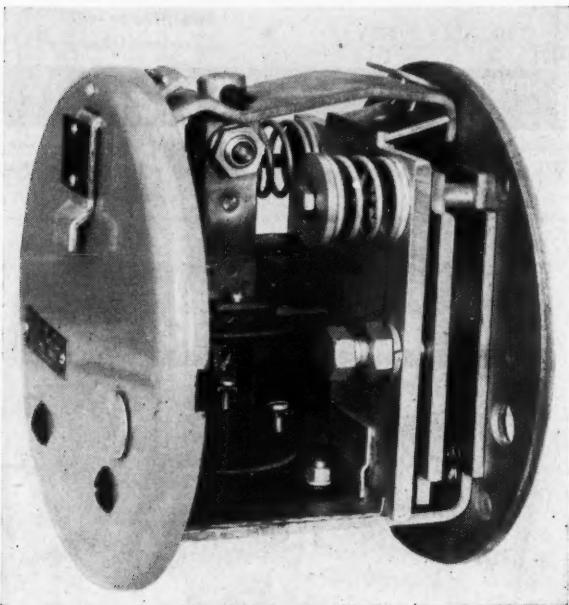
**Provides precision stopping,
holding of equipment . . .**

magnetic brake has a single disc for quick action without drag; indicator shows extent of lining wear

Uses: For machinery requiring quick and accurate stopping, such as hoists, centrifuges, conveyors, etc.

Features: Use of a single disc provides quick braking action without drag and with less lining wear. An indicator accurately shows the extent of lining wear, which does not materially reduce brake torque.

Description: Designed to be mounted on NEMA type C motor flanges, magnetic disc brake line provides a torque range of 10 to 75 lb-ft for both AC or DC service. Brake



Magnetic disc brake

can be mounted on a vertical shaft without change except adjustment of torque spring. A wrap-around cover that can be removed either sidewise or endwise provides maximum accessibility without the need for brake end clearance.

Brakes have a manual release with automatic reset. Brake lining is a solid disc with no rivets. Brake adjustments are required infrequently, but can be easily made.

Source: Cutler-Hammer, Inc., Dept. CP, 563 North 12th St., Milwaukee 1, Wis. . . or for more information check CP 5647 on handy form, pages 2 and 3.

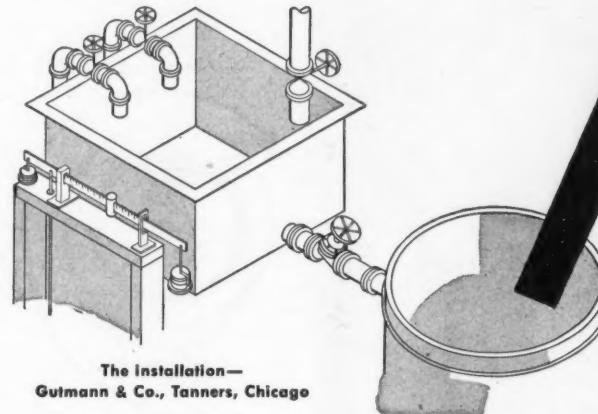
Motors shown

Four-page bulletin covers complete motor line. Bulletin G51-1 is issued by Wagner Electric Corp, Dept. CP, 6400 Plymouth Ave., St. Louis 14, Mo. When inquiring specify CP 5648 on handy form, pages 2 and 3.

for outstanding service

on Chrome Tanning Liquor

... for example



PROBLEM: To find a better replacement for valves and cocks used on outlet of open scale tank. Constant trouble with seat leakage, corrosive wear, seizing, and stuffing box maintenance.

WORKING CONDITIONS: Solution handled—highly corrosive basic sulphate of chrome used in tannage of Chrome upper leather. Several batches mixed daily. Gravity flow from scale tank.

SOLUTION TO PROBLEM: Crane No. 1615 Iron Body, packless Diaphragm Valve, Neoprene lined, featuring separate disc and diaphragm design.

RESULT: After more than 2½ years of steady, leak-free service, Crane Diaphragm Valve shows no sign of corrosive or erosive effects . . . no undue mechanical wear . . . operates as smoothly as new. Maintenance cost to date—zero.

Another typical case history demonstrating
how Crane Quality Valves assure low ultimate cost. And why . . .
More CRANE VALVES are used than any other make!

*... Switch to
Performance-Proved
CRANE VALVES*



No. 1615 Crane Iron Body Diaphragm Valve.
Get literature on this full line of multi-purpose valves
from your Crane Branch or Crane Wholesaler.

CRANE CO.

VALVES • FITTINGS • PIPE • PLUMBING • HEATING

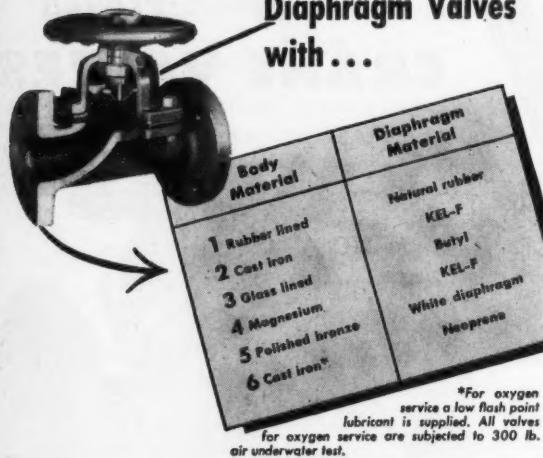
When inquiring check CP 5649 on handy form, pgs. 2-3

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Branches and Wholesalers Serving
All Industrial Areas

WHAT WOULD YOU SPECIFY?

Fluid	Concentration	Temp.	Type of Valve	Valve Material
1 Sulphuric Acid	20%	120 F.		
2 Sulphuric Acid	100%	180 F.		
3 Hydrochloric Acid	32%	80 F.		
4 Hydrofluoric Acid	50%	125 F.		
5 Boar		200 F.		
6 Oxygen		Ambient		

We supplied
Grinnell-Saunders
Diaphragm Valves
with ...



In several of these cases other body materials or diaphragms might serve. Really important is the versatility of Grinnell-Saunders Diaphragm Valves in handling corrosive fluids, gases, compressed air, food, suspended solids . . . where corrosion, abrasion, contamination, clogging, leakage, maintenance are problems.

Grinnell-Saunders Valve bodies are stocked in cast iron, malleable iron, stainless steel, bronze, and aluminum, with other materials available on special order. Valve bodies can be lined with lead, glass, natural rubber or neoprene. Diaphragms are available of natural rubber and a number of synthetics to suit particular service conditions.

Features of the Grinnell-Saunders Diaphragm Valve

- diaphragm absolutely isolates working parts from fluid • diaphragm lifts high for streamlined flow in either direction • diaphragm presses tight for positive closure • body, lining and diaphragm materials to suit service • simple maintenance — diaphragm easily replaced.



GRINNELL

WHENEVER PIPING IS INVOLVED

Grinnell Company, Inc., Executive Offices, Providence, R. I.
Sales Offices and Warehouses in Principal Cities

PROCESSING EQUIPMENT

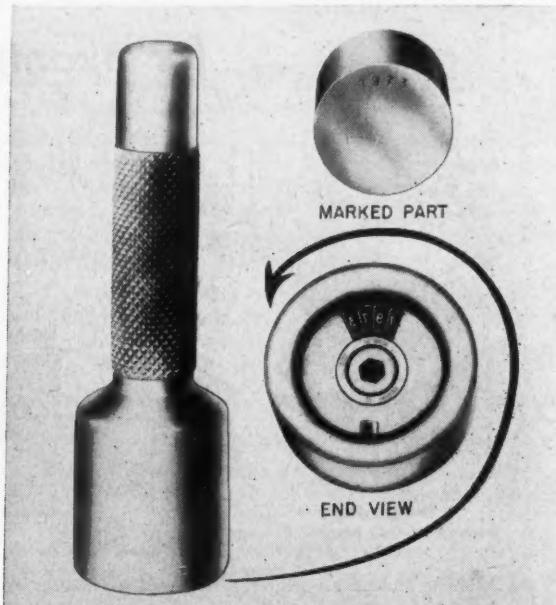
Introduces type holder simplifying stamping ends of rounds . . .

unique type holder reduces type-setting time; unit is custom made for specific applications

Uses: Holder for simplifying the stamping of curved line markings on the ends of small rounded parts.

Features: Holder is made of special steel to prevent spalling and mushrooming.

Description: Model SH-15 Curved Line Holder accommodates type which can be set in a partial or complete circle, with the maximum set-up determined by the character size and the diameter of the part to be stamped. Taper



Type holder simplifies marking ends of rounded parts

sided type is used, but no slots are required for retaining it in the holder. Type is held securely in position by a plastic insert which expands when a set screw in the center of the holder is tightened down against it. This type retaining device reduces set-up time.

Holder is custom-made for specific applications. Generally it is made with rounded knurled handle, and it can be supplied with letters, figures, and special characters if required. Although primarily designed for marking small parts, it also can be built for use on any size part.

Source: Development of the M. E. Cunningham Company, Dept. CP, 117 East Carson St., Pittsburgh 19, Pa. . . or for more information check CP 5651 on handy form, pages 2 and 3.

Driving power high for weight of latest electric screwdriver . . .

as much as 35 percent lighter in weight than conventional tools in the same capacity range

Uses: Pistol grip electric screwdriver is available in thirteen attachment and speed variations for driving up to No. 12 screws and for setting nuts up to $\frac{1}{4}$ " thread.

Features: Maker reports these tools are from 30 to 35 percent lighter in weight and deliver more power, pound

When inquiring check CP 5650 on handy form, pgs. 2-3

Neff & Fry Silos

Carry Enormous Loads

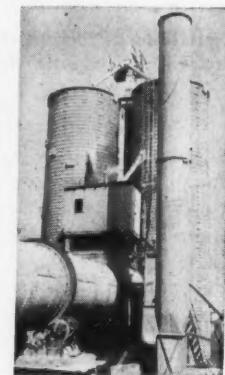
• Shown in the accompanying photo are two 16' x 60' Neff & Fry Silos. Each holds 631 tons of crushed limestone. Conveying machinery is mounted directly upon the silos. An adjacent 16' x 47'6" silo, not shown in photo, holds 239 tons of coal and supports conveying machinery.

This installation exemplifies the distinctive strength which Neff & Fry Silos derive from their Super-Concrete Staves. The staves are formed under hydraulic pressure of approximately 140 tons, giving them rocklike density and load-bearing ability.

Neff & Fry Silos are being used for handling and storing 85 kinds of flowable bulk materials. Many of them have been in continuous service for more than 30 years with insignificant upkeep cost. They do not spall, rust, rot, or collapse.

Ask for our interesting folder, "Bins with the Strength of Pillars." It will be mailed to you.

THE NEFF & FRY CO. •



166 Elm St.
Camden, Ohio

SUPER-CONCRETE STAVE
STORAGE BINS

NEFF & FRY

When inquiring check CP 5652 on handy form, pgs. 2-3

The Portable MORSE ROTATOR

THE NEWEST
ADDITION
TO 25 YEARS
OF SUCCESSFUL
MANUFACTURING
EXPERIENCE



SAVES TIME! SAVES LABOR!
SAFELY ROTATES UP TO 500 LBS. AT 10, 20 OR 40 RPM

A powerful, compact motorized unit that will cut costs of mixing, tumbling, cleaning, etc. Scientifically engineered for smooth, safe revolving. Can be loaded by ONE MAN and is easily moved. The power drive has a $\frac{3}{4}$ " dia. shaft and is equipped with self-aligning bearings. Four 4" dia. Neoprene drive wheels adjustable to take from 1 to 55 gal. cylindrical containers. Wt. before crating 137 lbs. Furnished with motor and gear reduction unit. Write For Complete Information.

MORSE MANUFACTURING CO., INC.

124 Dickerson Street Syracuse 2, N. Y.

When inquiring check CP 5653 on handy form, pgs. 2-3

for pound, than conventional tools in the same capacity range.

Description: "ED" series screwdrivers are fashioned after maker's Thor Silver Line drills and are available in speeds of 500, 800, and 1100 rpm in all-straight and 25-degree angle attachment models. The 660 and 880 rpm right-angle models have positive, kick-out and double-slip clutches.

Source: Development of the Independent Pneumatic Tool Company, Dept. CP, 175 North State St., Aurora, Ill. . . or for more information check CP 5654 on handy form, pages 2 and 3.

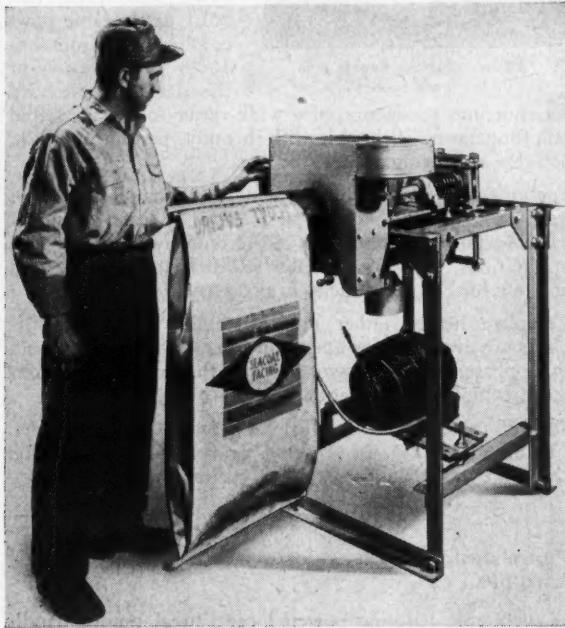
Bag position does not affect accuracy in weight of material delivered . . .

feed hopper is equipped with agitator designed to prevent bridging

Uses: Bag packer is used for weighed filling of valve-type paper bags.

Features: Bag weighing tube is independent of material-conveying tube housing so that bag position does not affect final weight delivered.

Description: Unit has 51 inch overall height, is only 24 inches wide. Operator hangs bag on tube and presses start button. When the predetermined weight is reached, tube displacement throws a microswitch which stops the feed. Hopper agitator is reported to maintain a steady



Packer fills bags to accurate weight regardless of bag position

flow of a wide variety of granulated and powdered products. Black Diamond Automatic Valve Bag Packer is equipped with totally enclosed motor and dust-tight electrical fittings. In conjunction with a dust control housing, these make machine easy to clean as well as safe from explosion. Manufacturer offers data or free tests on products.

Source: Manufactured by Black Products Co., Dept. CP, 13513 Calumet Ave., Chicago 27, Ill. . . or for more information check CP 5655 on handy form, pages 2 and 3.

PROCESSING MACHINERY BULLETIN

Reporting News and Machine Design Developments

IN BUSINESS TO

NRM

REDUCE YOUR COSTS

CHANGE MILL GUIDES ON NRM LABORATORY MILL IN 3 MINUTES

On NRM's Model 48 Laboratory Mill, stainless steel mill guides of advanced design permit change in set-ups, or replacement for cleaning, in three minutes or less.

Such attention to the research man's problems is inherent in NRM mills, which have been designed in cooperation with leading industrial research laboratories and government and university laboratories.

NRM mills are available with roll diameters of 4", 6", or 10", for roll lengths of 9", 12", or 20". The forged steel rolls are mounted in tapered roller bearings. Leakproof pressure joints with internal piping eliminate the need for packing.

The mills are fully enclosed, suitable for use on high-temperature milling. A



knee safety stop and a plugging safety stop are provided.

NRM's line of laboratory mills, calenders, washers, tubing machines and allied equipment provide tools for sound, accurate research. For full information, write National Rubber Machinery Company, 47 West Exchange Street, Akron 8, Ohio.

Fatigue testing machine records number of flexes



This unit was developed for fatigue testing and the ASTM Flex Test. Specimens clamped between the two horizontal jaws are flexed when the lower jaw is moved by reciprocating action. The number of flexes is recorded on a counter, which stops when the test specimen breaks.

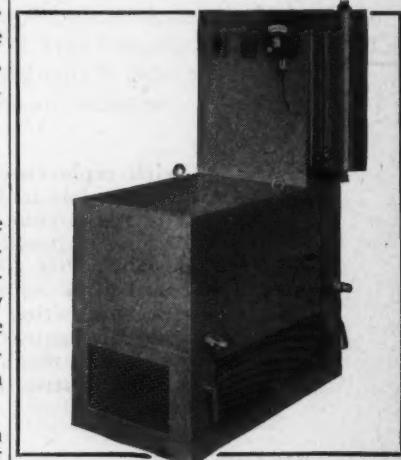
If accelerated tests, or tests at high temperatures are desired, the NRM Model D machine can be built into a constant-temperature electric oven. Temperature is thermostatically controlled. A timer is provided.

PROVIDES CIRCULATING OIL AT TEMPERATURES TO 575°F.

Developed originally for plastics extruders, the NRM oil heating and circulating unit can be used to service any machine or process requiring circulating oil at temperatures up to 575°F. Capacity is 5 gallons per minute.

The oil passes over the full area of three 6-KW immersion heaters. Temperature is maintained at the desired level within an accuracy of two degrees by thermostatic controls.

The unit can be switched over to cold oil at any time. When cold oil is circulated, the heaters are automatically shut off and the oil in the reservoir and heating chambers does not circulate. Thus a reserve of hot oil is maintained for starting.



For complete information write Plastics Machinery Division, National Rubber Machinery Company, Akron 8, O.

NATIONAL RUBBER MACHINERY CO.

PLANTS at Akron and Columbiana, Ohio and Clifton, N. J.
AGENTS East: National Rubber Machinery Co., Clifton, N. J.
West: S. M. Kipp, Box 441, Pasadena 18, Calif.
EUROPE Rubber Machinery: GILLESPIE & COMPANY
96 Wall Street, New York 5, N. Y.

General Offices & Engineering Laboratories
Akron 8, Ohio

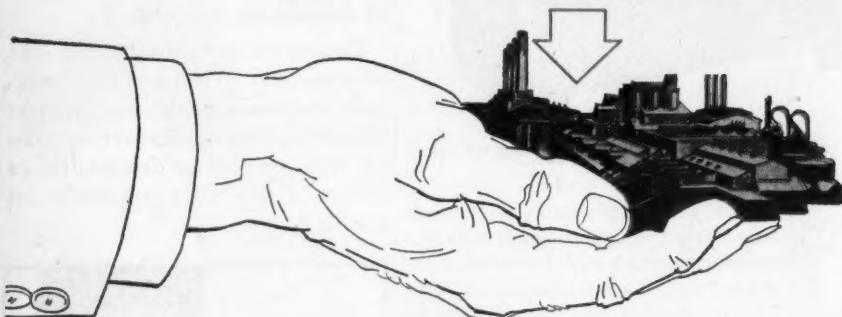
Creative
Engineering

When inquiring check CP 5656 on handy form, pgs. 2-3



This small investment . . .

**can save you thousands of dollars worth
of hard-to-replace equipment and property**



TODAY, with replacement costs rising and vital materials in limited supply, you'll want to make your present equipment last as long as possible—produce as much as possible. Pitt Chem Protective Coatings guard your equipment with a tough, surface-protecting film . . . an impervious sheath against strong chemicals, high temperatures, atmospheric exposure and other destructive elements of

industrial corrosion and contamination.

Pitt Chem Protective Coatings are completely uniform and dependable because they are laboratory-controlled from raw materials to finished product. You'll find that the cost of safeguarding your equipment with Pitt Chem is surprisingly low. • For more information, write today for new booklet, "Control Corrosion Through Pitt Chem Protective Coatings."

W&D 3726C

- ★ Hot Applied Tar Base Coatings
- ★ Cold Applied Tar Base Coatings
- ★ Alkyd Base Coatings
- ★ Chlorinated Rubber Base Coatings
- ★ Vinyl Base Coatings
- ★ Phenolic Base Coatings

OFFICES: NEW YORK • CHICAGO • ST. LOUIS
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Protective Coatings Division

**PITTSBURGH
COKE & CHEMICAL CO.**

Grant Building • Pittsburgh 19, Pa.

When inquiring check CP 5657 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

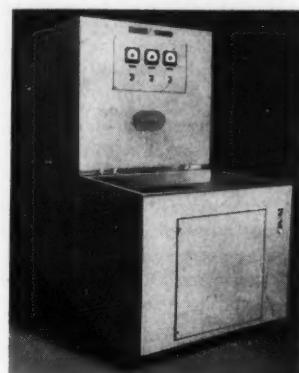
Cabinet of induction heater totally enclosed to protect electronic parts . . .

20-kw unit furnishes heat for annealing, hardening, brazing and soldering

Uses: Provides heat for high-speed annealing, brazing, hardening and soldering.

Features: Totally enclosed steel cabinet (NEMA Type 12) is equipped with felt gasketed and bolted doors to protect components from dirt, grit and oily vapors, thus reducing need for maintenance and providing minimum of down-time. Heater is certified to meet FCC regulations.

Description: Water is used to cool oscillator tube and tank circuit of the electronic type 20-kw induction heater. In addition, blowers recirculate air within the enclosure to cool seals of oscillator tube and bases of rectifier tubes.



20-kw induction heater with work table

Available in two models, one with and one without variable power adjustment. Type HM-20L1 has variable power adjustment from 0 to 100% by means of rheostat. It is intended for short-run production of a wide variety of parts. Rapid on-off operation is possible with this unit, permitting quick, accurate hardening of selected areas.

For long-run, higher production applications which do not have rapid cycling, the Type HM-20L2 heater (without variable power adjustment) is recommended. On such applications, heater is initially set to heat a specific part and no further adjustment is necessary.

Complete heater, either model, weighs about 3600 lb. Units are available for operation on 230, 460 or 550 volt, three phase, 60 cycle power supply. Bul GEA-5594 carries more complete information.

Source: Announced by General Electric Company, Dept. CP, Schenectady 5, N. Y. . . or for more information check CP 5658 on handy form, pages 2 and 3.

Pump design stresses long life . . .

portable gasoline powered centrifugal pumps handle from 4000 to 90,000 gal per hr

Uses: Portable gasoline powered pumps are used for general purpose work.

Features: Pumps are specially designed for quick and inexpensive maintenance. The impeller shaft seal is so designed that it is not subjected to pump pressure and is reported to have a longer life than conventional types. Carbon-steel air peeler is adjustable to maintain efficiency of self priming throughout pump life.

Description: Portable centrifugal pumps for 1½" to 6" discharge pipe have a range from 4000 to 90,000 gal

PROCESSING EQUIPMENT

per hr. All are self contained with engine. Bulletin 51-27 gives further information.

Source: "Rex" pumps are available from Chain Belt Co. of Milwaukee, Dept. CP, 1600 West Bruce St., Milwaukee 4, Wis. . . or for more information specify CP 5659 on handy form, pages 2 and 3.

Bin vibrator starts easily, without pounding . . .

lightweight, quiet unit can be installed readily in a variety of positions; won't harm bin

Uses: Aids movement of such materials as coal, granular chemicals, cement and other materials that arch and resist movement toward hopper and bin outlets or where wet mixtures tend to entrain air.

Features: Starts instantly without manual assistance, and is reported to be virtually noiseless, self-lubricating and jam-free. Light in weight, the vibrator can be mounted easily in many different ways.



Description:
Peterson Vibrolator vibrates bin and causes materials to flow toward outlet. The powerful all-directional vibration does not damage hopper or storage bin. Unit is available in different sizes to suit various operating conditions, materials and equipment.

Source: Made by Martin Engineering Company, Dept. CP, Kewanee, Ill. . . or for more information check CP 5660 on handy form, pages 2 and 3.

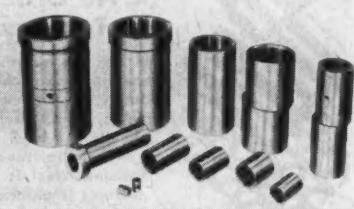
Variety of bearings available in many dimensions, types, metals, and finishes . . .

conventional sleeve bearings up to 24" diam as well as flanged, lugged, and special types

Uses: Standard sleeve bearings and lugged, split, or special types.

Features: Castings are reported to be made from rigidly controlled bearing metals recommended for specific uses. Special lubrication designs are available.

Description:
Sizes range from fractions of an inch up to 24 inch diameter. Plain, flanged, split or combinations of these types are available. Also, special flanges or lugged flange types are made to order. Any of the above types can be obtained in a finish ranging from precision machined to semi-finished for rough work. Any quantity is available. Further details are available from the manufacturer.



Typical bearings

Source: Bearings are available from Bronze Bearings, Inc., Dept. CP, 778 North Ave. E., Cranford, N. J. . . or for more information check CP 5661 on handy form, pages 2 and 3.

Carbon, Alloy and Stainless steel tubes are defined under CMP regulations as "controlled materials". As such, they are critical materials. Not being a mind reader, "Mr. Tubes"—your B&W Tube Company representative—needs a close look at the following facts in order to supply the available tubing most economically suited to your requirements.



1 All related CMP authorizations and government contract numbers.



2 Any acceptable alternatives in type, finish, composition, and size.



3 A brief, informative description of your intended fabricating methods.



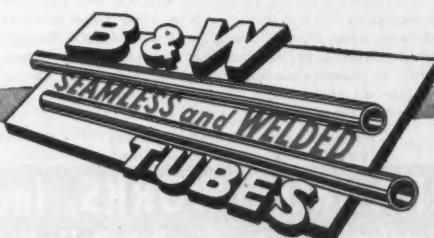
4 A description of the end-use, exact as to product and its service.

THE BABCOCK & WILCOX TUBE COMPANY

Executive Offices: Beaver Falls, Pa.

General Offices and Plants

Beaver Falls, Pa.—Seamless Tubing; Welded Stainless Steel Tubing
Alliance, Ohio—Welded Carbon Steel Tubing
Sales Offices: Beaver Falls, Pa. • Boston 16, Mass. • Chicago 3, Ill.
Cleveland 14, Ohio • Denver 1, Colo. • Detroit 26, Mich.
Houston 2, Texas • Los Angeles 15, Calif. • New York 16, N. Y.
Philadelphia 2, Pa. • St. Louis 1, Mo. • San Francisco 3, Calif.
Syracuse 2, N. Y. • Toronto, Ontario • Tulsa 3, Okla.



TA-1640-C

When inquiring check CP 5662 on handy form, pgs. 2-3

Use Self-Dumping Containers



SIMPLE - SAFE - SPEEDY
MATERIAL HANDLING

SAVE MANPOWER while STEPPING UP PRODUCTION with ROURA Self- Dumping HOPPERS

— Can Be Coated With Acid-Resistant Paints



Only ROURA Has the Exclusive
Instant Release (Patent Pending) Handle

Handling wet or dry, hot or cold, bulky materials quickly and easily, the ROURA is simple to operate—only one man is required for distributing and unloading—and he does this in much less time than ordinarily required under old-fashioned manual methods. Thousands of Roura Hoppers (which fit any standard fork or platform lift truck) are in constant daily operation, serving and saving for such firms as Owens-Illinois Glass, Corning Glass, National Fireproofing, General Motors, Ford, Chrysler, American Brake Shoe, General Electric, Westinghouse, Western Electric, American Steel Foundries, International Harvester, John Deere, etc.

By a simple lift of the exclusive release handle, the ROURA HOPPER dumps, rights and locks itself securely. Sizes— $\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{2}$ and 2 cubic yards; the ROURA HOPPER can also be designed for flat trucks and in other sizes to meet specifications. Also, it can be equipped with special flanges that permit stacking to desired tiers for storage or future distribution of materials—conserving valuable floor space. Priced below all competition, the ROURA will quickly pay for itself many times over.

Write today for detailed brochure.
"You Can Save 50% Labor-Time"

ROURA IRON WORKS, Inc.
1413 Woodland Ave. Detroit 11, Mich.

When inquiring check CP 5663 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

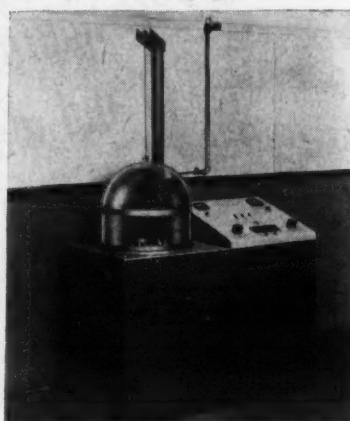
**Filament, high voltage terminals
inside vacuum jar provide
for many uses . . .**

unit has measured high vacuum in 18-inch diameter, counterweighted bell jar

Uses: Vacuum system may be used for evaporation of salts and metals, sputtering, applying metallic films, vacuum distillation, preparations of specimens for electron microscopy, study of discharges in gases at low pressures, study of phosphors under ion bombardment, study of properties of materials at low pressures and in various atmospheres, and industrially for vacuum coating of mirrors, plastic objects and such.

Features: Unit is reported to evacuate to 0.1 micron in less than seven minutes. Chamber contains terminals for heating filaments, and high voltage terminals for ionization clean-up and sputtering.

Description: Equipment consists of vacuum chamber



Vacuum unit has 18" diam bell jar

(18-inch diameter bell jar, base plate, a n d terminals), high speed pumping unit with mechanical fore pump and oil diffusion pump, control panel, hoist and counterweight for lifting bell jar. Special non-burn-out, cold cathode discharge gauge measures vacuum in the range from 1 mm to 10^{-5} mm Hg. All-steel cabinet uses no castings. It is 45 inches wide, 26 inches deep and has a 77 inch overall height including hoist. Cabinet is finished in two tone gray.

Power requirements for the EMV-5 Vacuum System are 2500W at 105/125 volt 60 cps. Unit consumes 3 cc of water per second.

Source: Manufactured by RCA Victor Div., Radio Corporation of America, Dept. CP, Camden, N. J. . . or for more information check CP 5664 on handy form, pages 2 and 3.

Voltage regulated DC power supply announced . . .

features excellent regulation, low ripple content, and low output impedance

Uses: Delivers continuously variable voltage from 200 to 1000 volts at currents from 0 to 500 milliamperes.

Features: Output voltage variation is less than $1\frac{1}{2}\%$ for line fluctuations from 105 to 125 volts, and less than $1\frac{1}{2}\%$ for load variation from 0 to 500 milliamperes. Ripple is less than 20 millivolts.

Description: Model 1250 voltage regulated power supply includes input and output fuses on the front panel, a time delay relay, and an overload relay. High voltage DC terminals are clearly marked on front panel. Negative side of the high voltage is grounded to the chassis. Terminals are also brought out at the back of the chassis. Rack



OMEGA

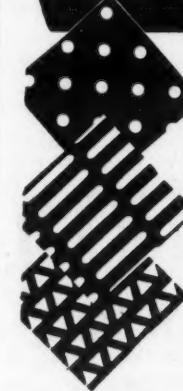
THE LAST WORD IN FEEDERS . . .

— for dry materials . . . sea coal, trap rock, Vinylite, hydrated lime, zinc hydrosulphite, activated carbon—and liquids . . . acids, chemical solutions, and suspensions. For Bulletins and complete information, address Omega Machine Company (Division of Builders Iron Foundry) 387 Harris Ave., Providence 1, R. I.

OMEGA MACHINE COMPANY

When inquiring check CP 5665 on handy form, pgs. 2-3

Do You Know—
**H & K SPECIALIZES IN
CHEMICAL PROCESS SCREENS?**



- Send Us Your Difficult Specifications
- No Order Too Large or Too Small

H & K has made a science of meeting the exacting specifications of the chemical industry for screens used under heat, corrosive, acid, alkali and other similar applications. H & K screens are available with hole tolerances as close as $\pm .0005$ ". Stainless steel is a specialty. Choice of patterns is practically unlimited. Accuracy of hole size and spacing, flatness and proper selection of available materials are all conscientiously controlled. Rough edges and burrs are held to a very minimum, assuring clean, efficient screens.



Catalog No. 62
tells the "hole" story
write for your copy.

**Harrington & King
PERFORATING
CO.**

5636 Fillmore St., Chicago 44, Ill.
114 Liberty St., New York 6, N. Y.

When inquiring check CP 5666 on handy form, pgs. 2-3

CHEMICAL PROCESSING

panel cabinet height is 28", width 21½", and depth 16". Weight is about 167 pounds.

Source: Product of Kepco Laboratories, Inc., Dept. CP, 149-14 41st Ave., Flushing, N. Y. . . or for more information check CP 5667 on handy form, pages 2 and 3.

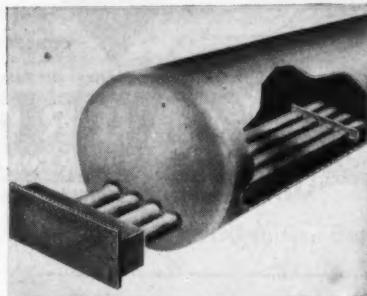
Low heat density protects product quality against fluid breakdown . . .

tubular electric units heat liquids over large area uniformly throughout tank

Uses: Provides low density heat for oils, tars, resins and other viscous fluids.

Features: Design of heater permits large input capacity without exceeding critical heat density limitations of the fluid being heated. Carbonization and other forms of fluid breakdown are avoided.

Description: Tubular heater units consist of a tube wall of any specified metal, a terminal box, and a removable heating element engineered for the power supply and the proper watt density for the particular application.



Heaters installed in tank

A distinct advantage is the fact that the complete heating element assembly can be easily removed from the heater tube, at any time, without draining tank or vessel. While there is rarely any occasion for removing these heater elements, this freedom of handling permits permanent installation of the heater tubes through the tank wall by welding. This eliminates all fluid joints.

Heater tube is of one-piece welded construction without any fluid joints. It is generally supplied 3" ID. It can also be furnished in stainless steel, and other materials are available on specification. Heaters are available in lengths up to 150'.

Because of their construction, the heaters are practically immune to mechanical damage and available in moisture or explosion-proof models.

Source: Tubular Electric Heaters are made by Martin-Quaid Co., Electronic Heating & Process Div., Dept. CP, 1813 Sedgley Ave., Philadelphia 32, Pa. . . or for more information check CP 5668 on handy form, pages 2 and 3.

Various rolling doors, grilles presented

Thirty-two-page catalog presents information on rolling overhead doors and grilles, fire doors, and bifold doors. Of special interest is size of rolling doors available; illustrated is one measuring 31'4" x 55'6", and another 81' high. Much data on construction, styles available, and mountings are contained. Operation and components are specified, and many photographs of installations are included. 1951 catalog is issued by The Kinnear Manufacturing Co., Dept. CP, Columbus 16, Ohio. When inquiring specify CP 5669 on handy form, pages 2 and 3.

TRADE PAPER EDITION
Published by
SCHUTTE and KOERTING
Company



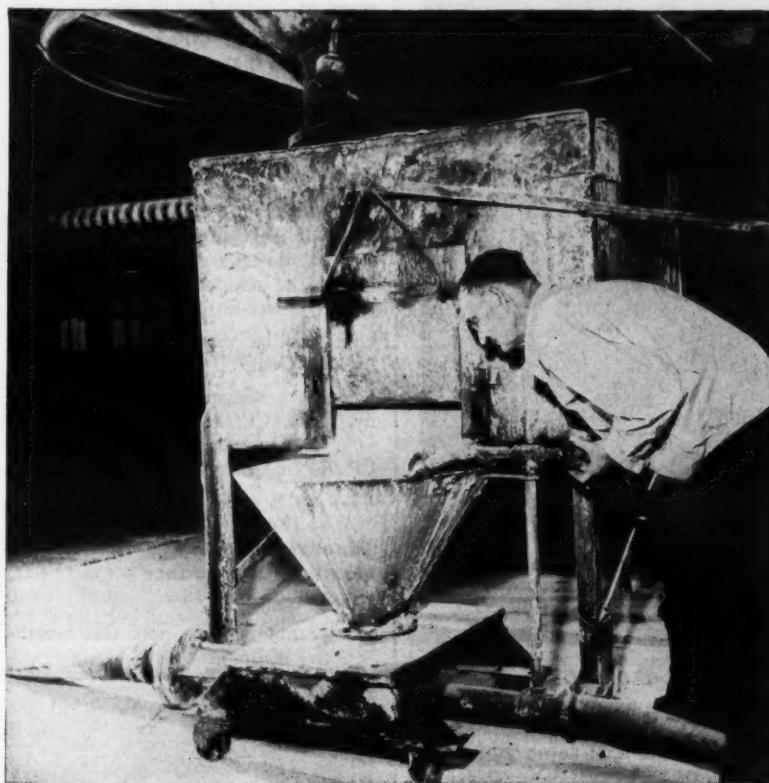
ENGINEERING News

KEY APPARATUS • HEAT TRANSFER EQUIPMENT • STRAINERS • CONDENSERS AND VACUUM PUMPS • OIL BURNING EQUIPMENT •
ROTAMETERS • THERMOMETERS • BAROMETERS • PRESSURE GAUGES • FLOW METERS • AIR COMPRESSORS • DUST COLLECTORS

Novel Portable Unit Conveys Spent Clay From Sun Plant

Sun Engineers Mount SK Hopper Eductor On Rolling Platform To Solve Handling Problem

Illustration and Story by Courtesy of Sun Oil Company



At International Harvester Company's West Pullman Works, SK Rotameters, mounted on panels as shown in the photo, are used for test checking carburetors of various

engines made by the company. The carburetors are installed in snap-jigs and are tested at low and wide-open flow—which corresponds to idling and full-speed operation. The Rotameters are used to check the air and fuel consumption. Since this is a production operation involving the checking of thousands of carburetors, instruments which would indicate almost instantly were necessary. The SK Rotameters, after installation, met all specifications for both speed and accuracy. For information on SK Universal Rotameters for panel mounting, request Bulletin 18-RB.

WITH the arrangement shown in the photo, engineers at the Marcus Hook, Pa., Refinery of Sun Oil Company neatly solved a materials handling problem and materially decreased the time required to convey spent clay from several filter shells to a settling basin outside the building.

They mounted a standard SK Fig. 254 Hopper Type Eductor on a movable platform in such a way that the hopper is located above the platform and the eductor proper below. Flexible pressure and discharge hose connections are used.

When it becomes necessary to remove spent clay from any one of ten filter shells, a movable secondary drum, or hopper, is rolled under the man-head of the filter shell and the spent clay is dropped into this. A manually operated gate in the secondary hopper is regulated to permit the proper amount of clay to feed into the eductor hopper.

Pressure water, by-passed from the inlet line on the eductor, issues through the secondary nozzles in the eductor hopper and washes the clay down into the eductor chamber. Pressure water, issuing through the nozzles of the eductor, entrains the clay and discharges through the flexible hose with sufficient force to carry the clay-water slurry to a settling basin outside the building.

This is but one of many ways a wide variety of standard eductors manufactured by SK have been applied by ingenious engineers in a variety of industries. For facts and figures on all types of eductors and for ideas and suggestions concerning their use, request Bulletin 2-M.

SCHUTTE and KOERTING Company
Manufacturing Engineers

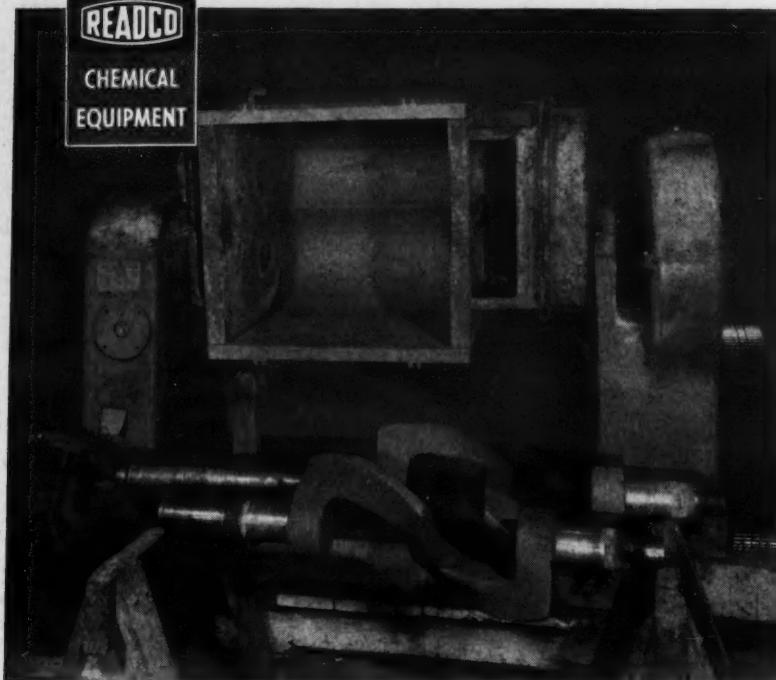
22 CORNWELLS HEIGHTS
BUCKS COUNTY, PA.

Representatives in Principal Cities

When inquiring check CP 5670 on handy form, pgs. 2-3

After 10 YEARS of severe service mixing CORROSIVE BATTERY PASTE...

READCO
CHEMICAL
EQUIPMENT



Each part of the Readco Double Arm Mixer shown above has been thoroughly tested and checked for indications of corrosion and wear after 10 years of severe service mixing battery paste. Upon completion of the examination, all drive parts have been found to be in excellent condition. The double arm, sigma blades need a minimum of remachining and replacement of original wear strips. A new bowl center and bowl ends are the only completely new parts needed.

Readco Double Arm Mixers are built to last, and they do it well. **Read Standard Corporation, Bakery • Chemical Division, York, Pennsylvania.**

FORMERLY Read Machinery Division of The Standard Stoker Company, Inc. ONLY THE NAME HAS CHANGED.

READ STANDARD

CORPORATION

When inquiring check CP 5671 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Measure power factor without cutting line . . .

hook-on meter provides direct reading, is portable

Uses: For use in plants where maintenance of a high power factor is an important economic consideration. For circuits with voltages from 100 to 600 volts and currents from 15 to 600 amperes.

Features: Permits measurement of power factor directly without use of calculator cards or other interpolations. Hook-on feature eliminates cutting of wires or interruption of service.

Description: AK-3 power-factor meter is a portable instrument that gives readings accurate to within 0.05 power factor. Frequency range is 50-90 cycles; effective scale length, 13.5"; voltage breakdown test, 4000 volts RMS.

To operate, user merely clips voltage leads to the potential source, clamps a hook around the conductor, and rotates the selector dial to obtain the proper power-factor reading.

Unit can be used on any balanced 3-phase circuit.

Source: General Electric Company, Dept. CP, Schenectady 5, N. Y. . . or for more information check CP 5672 on handy form, pages 2 & 3.

Mineral wool filters, small holders reduce respirator size . . .

permit better vision, less breathing resistance



Facepiece allows good vision

Uses: For protection of workers in industries where toxic or fibrosis-producing dusts are factors.

Features: Mineral wool filter requires less than half filter area of pre-

Making Warm Friendships on Hot Jobs



WATER JACKETED APCO PUMP

Developed especially for the efficient handling of high temperature and highly volatile liquids. Delivers outstanding performance. Unbeatable on high head, small capacity duties.



WE STOCK STAINLESS STEEL APCO PUMPS

For the convenience of our engineer friends we carry for immediate shipment, popular sizes of APCO Pumps in STAINLESS STEEL.



AURORA CENTRIFUGAL PUMPS

are available in many types and sizes—all noted for their streamline coordination between impellers and shells.

Write for
CONDENSED CATALOG "M"

DISTRIBUTORS IN PRINCIPAL CITIES



AURORA
PUMP COMPANY

62 LOUCKS STREET, AURORA, ILLINOIS

When inquiring check CP 5673 on handy form, pgs. 2-3

ABBÉ ENGINEERING 

VOL. 2 NO. 1

That's Interesting!

100% Scrap Recovery
Reworking Ceramic Casting Scrap
into Slip with the
Abbé Milling Mixer

Sifting a Cloud . . .
White ceramic is ground fine to make sand flour; you get little or no waste. You can add water to the flour and mix it with other materials to make the "de-ingredients". It's almost like magic.

Want More Sifting in Less Space?

The current issue of "Abbé Engineering Millings" shows how you can get material increases in sifting output in just a fraction of the floor space required by ordinary methods. It also covers improved mixing techniques for fluids and pastes.

We'll be glad to send a copy and put your name on our mailing list.

ABBÉ ENGINEERING CO.

46 CHURCH STREET
NEW YORK 7, N.Y.

Makers of
ABBÉ ENGINEERING Ball, Pebble and Jar Mills

When inquiring check CP 5674 on handy form, pgs. 2-3

outstanding

for dependable quality and uniformity

PICCO

SOLVENTS AND SOLVENT OILS

Hi-Sole Aromatic Petroleum Naphtha

PICCO Coal Tar Naphtha

Hi-Sole Heavy Naphtha

PICCO Coal Tar Heavy Naphtha

Hi-Sole Solvent Oils • PICCO Heavy Oils

Write for factual bulletin describing Picco Solvents and Solvent Oils. We will gladly send samples. Specify application, so we can furnish suitable grade.



PENNSYLVANIA INDUSTRIAL CHEMICAL CORP.
Clairton, Pennsylvania
Plants at CLAIRTON, PA.; WEST ELIZABETH, PA.; and CHESTER, PA.
Representatives in Principal Cities

When inquiring check CP 5675 on handy form, pgs. 2-3

KEEP TROUBLES OUT...
put
Stainless Steel
FLOATS in

COMMON float failures can cause costly repairs and shutdowns which cut down on the efficiency of plant operations. That's why it pays to specify stainless steel floats in order to get long, trouble-free service in all but extremely specialized applications where specific materials are required.

When you use Chicago's stainless floats, you're assured of the best floats available—floats that will pay big dividends in less maintenance and more continuous service. Specify Chicago's stainless floats and keep troubles out!

WRITE FOR FREE CATALOG

CHICAGO FLOAT WORKS, INC.

2340 So. Western Ave.
Chicago 8, Illinois

When inquiring check CP 5676 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

vious models. Also offers only half the breathing resistance. Being smaller in diameter, and shallower in depth, redesigned filter holders contribute to better vision from all angles.

Description: Molded, flexible rubber facepiece has compact replaceable mineral wool filter elements. Each filter is held in place by a flat W spring and is protected by perforated light metal cover. Light finger pressure makes them snap off instantly when desired.

Diaphragm type exhalation valve is positive in action and offers little resistance to exhaled air. It is protected by a metal housing. One-piece elastic headband is readily adjusted. It is attached to body of respirator by O-rings, permitting free pivot. Headband can be worn around neck or over crown of head.

Source: Comfo respirator is made by Mine Safety Appliances Co., Dept. CP, Braddock, Thomas and Meade Sts., Pittsburgh 8, Pa. . . . or for more information check CP 5677 on handy form, pages 2 and 3.

Arrangement of coils boosts dehumidifier capacity . . .

clean coil surfaces aid heat transfer in units

Uses: Designed for a wide range of dehumidification jobs. Serviceable in applications where removal of as much as 18 pints of water from the air in 24 hours under conditions of 80°F and 70% relative humidity.

Features: High capacity is achieved by vertical arrangement of spiral finned evaporator coils. Constant downward drainage of water along the spiral fins maintains a damp clean coil surface. At the same time accumulation of water on coil is prevented which contributes to effective heat transfer conditions. Weight is only 60 lb.; moves easily on casters.

Description: Unit is enclosed in an attractive, flat-topped, rectangular cabinet 23½" high, 17½" long and 13½" wide. Finish is baked hammer-tone enamel. Condensed moisture can be disposed of through nearest drain by attaching a piece of rubber tubing to the drip pan spout. Removable condensate pail is also provided with the unit. Unit plugs into any 115 volt circuit.

Source: Humdry ½ hp units are built by Carrier Corp., Dept. CP, Syracuse, N. Y. . . . or for more information check CP 5678 on handy form, pages 2 and 3.



**"Think of saving
as well as of getting."**

—Ben Franklin's Almanac, 1757

Scrap steel saved today can help steel products come thy way.

—Acme Steel Notebook, 1951

How you can help in the scrap drive.

1. Do a thorough housecleaning job in your shop. Collect all scrap steel, no matter how small.

2. Check your equipment now! Junk all machines worn out or broken beyond repair.

3. Ask your people to do the same job of housecleaning at home.

4. Sell your collection to a dealer in metal scrap. He will see it gets where it is needed.

ACME STEEL COMPANY

Dept. CP-71, 2838 Archer Avenue, Chicago 8, Illinois

To find out which of Acme Steel's 41 service offices in the United States and Canada is nearest you, check your telephone directory or write us.

ACME STEEL CO.
CHICAGO

**ACME
STEEL**

1951 is Acme Steel Company's 71st year of continuous operation, and the 50th consecutive year in which we have paid dividends to our stockholders.

ACME STEELSTRAP flat steel strapping and ACME UNIT-LOAD carload bracing BAND, SEALS and TOOLS • ACME SILVER-STITCHERS and ACME SILVERSTITCH WIRE for box stitching • ACME-MORRISON METAL STITCHERS and BOOK STITCHERS • ACME-CHAMPION BAG STITCHERS • ACME HOT AND COLD ROLLED STRIP STEEL • ACME GALVA-BOND steel slot stock for Venetian blinds • ACME STEEL SPECIALTIES, including hoops, corrugated fasteners, barbed box straps, nail-on strapping and other container reinforcements • ACME STEEL ACCESSORIES—snips, tool mounts, reel stands, coil holders, coil trays.

When inquiring check CP 5679 on handy form, pgs. 2-3

for SAFE, SURE SERVICE SPECIFY CHIKSAN



Standard Swivel Joints.
For pressures from
125 psi. to 15,000 psi.



High Temperature Swivel
Joints. For temperatures to
500°F. M.W.P. 700 psi.



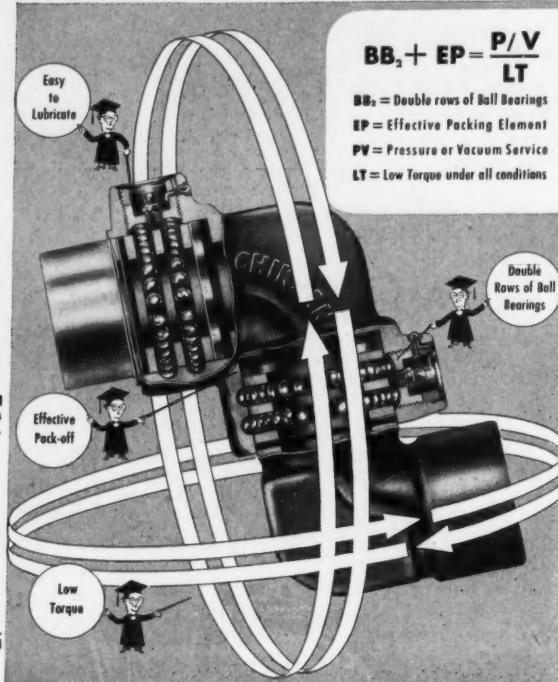
Rotating Joints. For 150-lb.
steam, brine, etc. Adapted
for siphon return line.



Sanitary Swivel Joints.
For Food Processing,
Dairies, Bottlers, etc.



Hydraulic Swivel
Joints. For pressures up to
3,000 psi.



For over a quarter-century, here at CHIKSAN, we have specialized exclusively on developing and designing Swivel Joints* for all purposes... on manufacturing them to our rigid standards of precision... and on following through in the field to check performance under all sorts of conditions. That's why there is no substitute for CHIKSAN Ball-Bearing Swivel Joints* when it comes to efficient service with maximum safety... longest life... and minimum maintenance.

It costs you nothing to take full advantage of CHIKSAN's specialized experience. CHIKSAN Engineers will gladly cooperate with you in designing flexible lines to meet your specific requirements.

WRITE FOR CATALOG NO. 50-C. REPRESENTATIVES IN PRINCIPAL CITIES—SOLD BY LEADING SUPPLY STORES EVERYWHERE

*For full 360° rotation in 1, 2 and 3 planes. Unlimited flexibility in pipe lines is secured merely by arranging swivels in proper sequence. Over 500 different Types, Styles and Sizes for pressures to 15,000 psi; temperatures to 500°F.; pipe sizes from $\frac{3}{8}$ " to 12" and larger.

CHIKSAN COMPANY
AND SUBSIDIARY COMPANIES

Chicago 3, Ill. BREA, CALIFORNIA Newark 2, N.J.

WELL EQUIPMENT MFG. CORP. HOUSTON 1, TEXAS

CHIKSAN EXPORT CO. BREA, CALIFORNIA NEWARK 2, N.J.

BALL-BEARING SWIVEL JOINTS FOR ALL PURPOSES

When inquiring check CP 5680 on handy form, pgs. 2-3

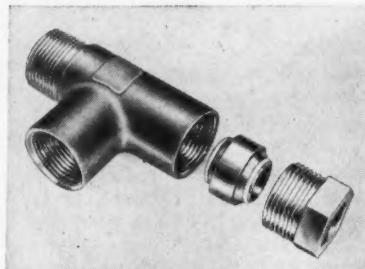
PROCESSING EQUIPMENT

Only one fitting used
to join several sizes
of tubing . . .

reducing couplings are eliminated

Uses: Designed to meet unusual piping conditions.

Features: Permit different sizes of tubing, or tube-pipe combinations, to be joined in a single fitting. This



Special stainless tee fitting

completely eliminates need for supplementary reducing couplings at which line leaks might occur. Also, installation costs are kept low as one fitting does the work of two or three.

Description: Illustration shows a "Koncentrik" tee equipped with a 1" tube, a 1" female pipe, and a $\frac{3}{4}$ " male pipe connection. These stainless steel fittings include connectors, unions, tees and elbows and incorporate a patented, automatically centering-seat, which provides a perfect wedge-type seal, even though tube is assembled off center. Another advantage is provided by reinforcing Teflon rings that double-seal seat to further guard against costly, dangerous gas or liquid losses.

Source: Special "Koncentrik" fittings are made by The Special Screw Products Co., Dept. CP, 2424 Euclid Ave., Cleveland, Ohio... or for more information check CP 5681 on handy form, pages 2 and 3.

**Breaks circuit on line
with 600 v AC . . .**

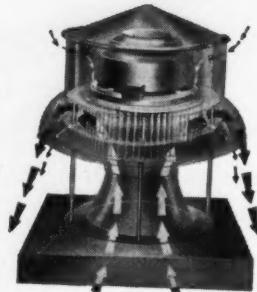
breaker has air-delayed series overcurrent tripping device.

Uses: Circuit breaker is for use in low voltage industrial and commercial power distribution systems, central station auxiliaries, motor starting duty, similar cases.

Features: Unit has completely new air-delayed series overcurrent tripping device, with all elements completely adjustable, that provides long-time delay on overloads and instantaneous tripping of fault currents.

Description: Series DB-50 breaker has interrupting capacity of 50,000

**GALLAHER
CERTIFIED RATINGS
FACT NOT THEORY**



GALLAHER AIR-VAN POWER EXHAUSTERS

Be sure of performance in your ventilation system. Gallaher ratings are the result of independent laboratory tests by a nationally recognized authority. These are not theoretical calculations but are actual tests against the conditions encountered in air expulsion.

This feature plus built-in scroll effect, motor out of the airstream, squirrel-cage fan, low silhouette, rugged weather-proof construction, economy of installation and maintenance and a patented hood ventilation system which forms a positive air seal-off against fumes, makes the Gallaher "Air-Van" outstanding.

Capacities 150-12,000 CFM: Static Pressures to 1 $\frac{3}{4}$ "
For full information, including an operational scale model demonstration in your own office, see your Gallaher representative or write Dept. F 4108 Dodge St., Omaha 3.

The GALLAHER Company
Omaha, Nebr.

When inquiring check CP 5682 on handy form, pgs. 2-3

**IF YOU HAVE A SPECIAL
INTERCOM PROBLEM**

**THAT YOU WANT TO SOLVE QUICKLY,
EASILY, AT LOW COST**

Investigate

WHEELER



Yes — all this and PROVED performance, too

Write for information, now

THE WHEELER INSULATED WIRE COMPANY, Inc.

Division of the Sperry Corp.

1112 EAST AURORA ST., WATERBURY 20, CONN.

When inquiring check CP 5683 on handy form, pgs. 2-3

**Save
Your
Heat Exchangers**



No more damage to tubes by rodding-out — no more dismantling, either. Now de-scale your heat transfer units by circulating Oakite Compound No. 32, the acidic material that's inhibited against attack on sound metal. Heat exchangers come clean faster, stay in service longer.

FREE BOOKLET 4305 tells all about it. Write Oakite Products, Inc., 18F Thames St., New York 6, N. Y.

SPECIALIZED INDUSTRIAL CLEANING
OAKITE
MATERIALS • METHODS • SERVICE

Technical Service Representatives in Principal Cities of U. S. & Canada

When inquiring check CP 5684 on handy form, pgs. 2-3

**"TELLEVEL" Bin-Level Control
STOPS-STARTS
CONVEYORS, ELEVATORS, PUMPS
AUTOMATICALLY**

Self-contained, easily installed, the Tellevel Bin-Level Control Switch is the automatic guardian that starts and stops all kinds of conveyor equipment. Tellevel's pendant float ball prevents overfilling of bins . . . gives automatic control of material levels . . . eliminates costly spillage . . . prevents choking or actual damage to bin feeding conveyors. Available for bulk materials or liquids. Write today for complete information. Ask for Bulletin No. 1048.



Rising Level of Material Tilts Float-Ball and Stops Conveyor.

STEPHEN S-A-DAMSON

Tellevel Bin Level
Controls • Car Loaders

SealMaster Ball Bearings

11 Ridgeway Ave., Aurora, Illinois

When inquiring check CP 5685 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

amp. It is rated at 600 volts AC, 250 volts DC, 100-1600 amp (continuous), and can be operated manually or by DC solenoid or AC Rectox solenoid. All parts are removable as complete units.

For use on feeder and back-up breakers, overcurrent trip units including both a long-time delay and short-time delay element can be specified, thus providing for selective operation on fault.

Source: Development of Westinghouse Electric Corporation, Dept. CP, Box 2099, Pittsburgh 30, Pa. . . . or for more information check CP 5686 on handy form, pages 2 and 3.

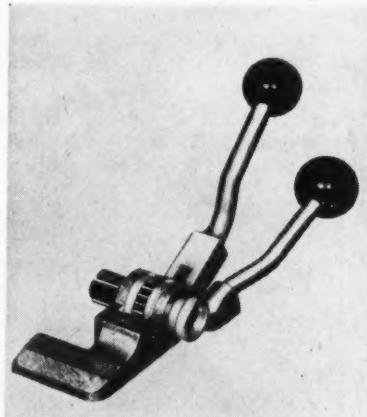
**Join steel strapping
tightly despite small
working space . . .**

tool places no wedge between strap and object tied

Uses: For pulling steel strapping of $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, or $\frac{3}{4}$ " tight around any size or shape load.

Features: Shortened handles permit using this tool where working space is limited. Compact to slip into pocket of overalls when not in use.

Description: Operates like large tools used for such service except that



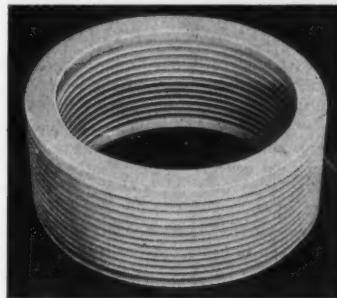
Steel strapping tool

it does not cut off surplus strap as an integral part of its binding action. Severing the surplus strap is performed as a separate operation with maker's hammer cutter. Tool achieves a tighter tie because it places no wedge between the strap and the item tied. This also provides better control of the binding operation.

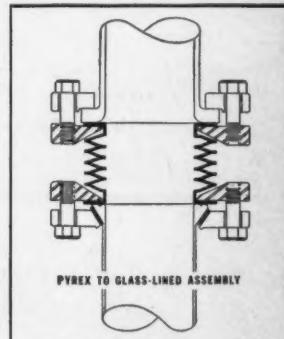
Source: 120 Steelbinder strapping tool is made by A. J. Gerrard & Co., Dept. CP, 1950 Hawthorne Ave., Melrose Park, Ill. . . . or for more information check CP 5687 on handy form, pages 2 and 3.

TEFLON EXPANSION JOINTS

**Tough • Heat-Resistant
Absolutely Chemical-Proof**

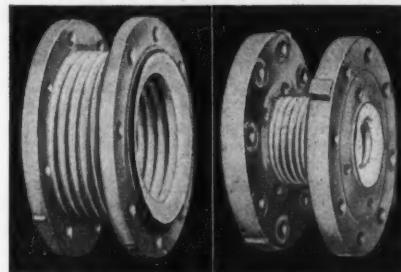


If your problem is thermal expansion, vibration, misalignment or any other condition demanding a flexible, chemical-proof piping section, then USG's Chemiseal Teflon Expansion Joints can save you money. They're tough, long-lasting and completely impervious to chemical attack.



Fabricated by a special USG process, Chemiseal Expansion Joints accommodate axial contraction and expansion or any reasonable amount of misalignment or vibration without danger of cracking or bursting. They're designed for 25 lb. pressure and are serviceable in a wide temperature range (-150° F. to 400° F.). Remember—Teflon is so inert chemically that it cannot be attacked by nor contaminate any known chemical used commercially.

Chemiseal Teflon Expansion Joints are available for any type of equipment and for a wide variety of operating conditions. Joints are normally supplied with suitable integrally-gasketed flanges drilled to 150 lb. A.S.M.E. standard. Exact requirements must be specified, so we'll be glad to send you Catalog No. 212 containing complete information.



First in Teflon Stock and Fabricated Parts...

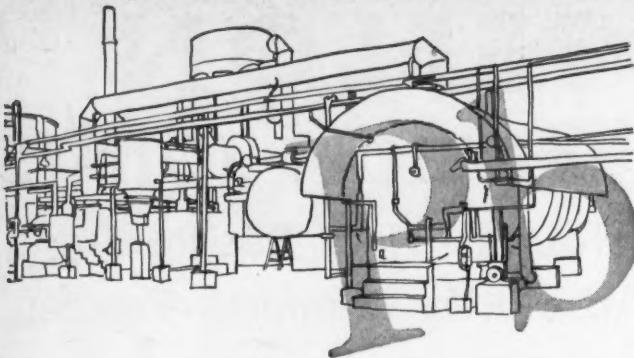
Teflon Products Division

UNITED STATES GASKET COMPANY

618 N. 10th Street

CAMDEN, NEW JERSEY

When inquiring check CP 5688 on handy form, pgs. 2-3



USING SULFURIC ACID?

Under many pressures, concentrations and temperatures, lead is the ideal material for handling sulfuric acid. It safely handles other corrosives as well.

For fabrication, lead is unique. Sheet lead can be welded, or "burned", to form a continuous lining; it can be bonded to another metal. Lead can be cast, die cast or pressure molded; extruded as pipe or other shapes; fastened by welding, flanging or bolting. Once installed, lead chemical equipment is easily repaired with a welding torch.

Because of the many complex factors in any corrosion problem, expert advice is usually advisable. For complete technical assistance, see Federated first. For lead products, think of ASARCO Brand lead pipe, lead sheet, and lead fittings.

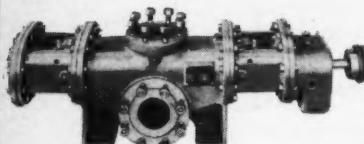
Available in all standard sizes and forms through Federated's 22 sales offices across the country.



Federated Metals Division

AMERICAN SMELTING AND REFINING COMPANY • 120 BROADWAY, NEW YORK 5, N.Y.

When inquiring check CP 5689 on handy form, pgs. 2-3



**FOR ONLY \$80 MORE
... you get a pump
WORTH \$800 MORE!**

Sier-Bath SCREW PUMPS

* Pump Shown: New External Gear & Bearing Bracket Type for non-lubricating fluids, semi-fluids. Capacities 1-700 GPM Discharge 1000 PSI for viscous liquids, 300 PSI for water.

TYPICAL PURCHASES

A. You buy a cam, lobe, vane or gear type pump for \$720.—pay another \$2580. for a slow speed motor (if you can get it), or for a faster motor, plus reduction gearing.

TOTAL: \$3350.

B. You buy a Sier-Bath Screw Pump for \$1570.—but pay only \$1860. for a high speed motor—and forget about reduction gearing!

TOTAL: \$3430.

CONSIDERATIONS

WITH PURCHASE B you invest your money in the pump—not in the motor. This is possible because Sier-Bath Screw Pumps can be direct connected at high rpm—up to 1800—and maintain lower liquid velocities than is possible with other types of rotary pumps. The advantages of purchase B over purchase A are: you get a pump that will provide more dependable service, cost less to maintain, and last longer—plus a motor that is smaller, less expensive, but just as serviceable as the \$2580. slow speed motor. All told, for \$80. more you get a pump worth \$800. more!

For Further Information
See Your Local Sier-Bath Representative, or write to

9268 HUDSON BLVD., NORTH BERGEN, N.J.

Also Manufacturers of Gearbox Pumps,
Gear Couplings, and Precision Gears

Member A.G.M.A.

Sier-Bath
GEAR and PUMP CO., Inc.

When inquiring check CP 5690 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Announces production
of improved ozone
generator . . .

for laboratory investigation of po-tentials of ozone

Uses: Generates laboratory quantities of ozone for the purpose of testing the potential value of ozone as an oxidizing agent in various chemical processes, in phenols and cyanide destruction in industrial wastes, and reduction of tastes, odors, and color in water purification.

Features: New model — replaces earlier models T-12 and T-19 by this manufacturer.

Description: Flexibility and ease of operation are reported for new laboratory ozonator, Model T-23. Units are also available for tonnage production of ozone.

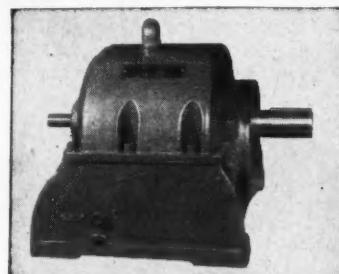
Source: Development of the Welsbach Corporation, Dept. CP, Philadelphia, Pa. . . or for more information check CP 5691 on handy form, pages 2 and 3.

**Double reduction speed
reducers rated
1-100 hp . . .**

8 unit sizes; 12 gear ratios, 6.25 to 58.3:1

Uses: Designed for applications on small to medium-size drives where the prime mover is coupled or belted to the gear unit.

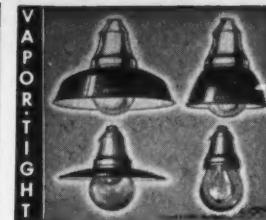
Features: Accurately hobbed single-helical gearing, taper-hardened by maker's BPT process; split-con-



Reducer with split case

struction cast iron case for accessibility; simple, positive splash lubrication system; anti-friction bearings; efficiencies averaging 96%.

Description: Double-reduction speed reducers, in ratings from 1 to 100 hp. Units use all-external type helical gearing, arranged in horizontal plane. When coupled to an electric motor, a straight-line drive results. Eight unit sizes are available; twelve standard gear ratios range from 6.25



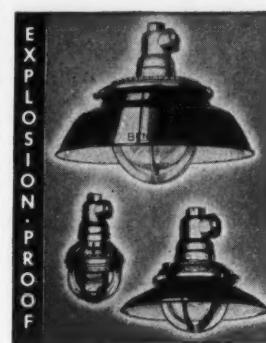
EXPLOSION-PROOF and VAPOR-TIGHT

Lighting Units

Benjamin's years of experience in safe lighting will be found particularly of value, not only from the standpoint of protecting life and property but also from the standpoint of insuring an uninterrupted flow of production.

In the solution of special lighting problems, Benjamin's recommendations will prove helpful. Benjamin Equipment available for this purpose meets all requirements of the National Electrical Code and bears the label of the Underwriters' Laboratories. For further data, send for free catalog bulletins. Address Product Information Department LL, Benjamin Electric Mfg. Co., Des Plaines, Illinois.

3804-BB



BENJAMIN

Lighting and Signal Equipment

Distributed Exclusively Through Electrical Wholesalers

When inquiring check CP 5692 on handy form, pgs. 2-3

**NEW
PERMANENT
NON-SLIP**

FIRM-GRIP
Genuine
NEOPRENE LATEX
GLOVES



- ✓ Permanent NON-SLIP on all 5 Fingers and Palm Highly efficient embossed surface is integral part of glove
- ✓ Impregnable to ACIDS, CAUSTICS, OILS
- ✓ Curved FINGERS for Comfort and Easy Use

No. 5740-5 LONG GAUNTLET Length 14", Gauge .030 to .040 Sizes 9, 10, 10½, 11, 12
No. 5720-5 LIGHT DUTY Length 10½" Gauge .017 to .020 Sizes 7, 7½, 8, 8½, 9, 9½, 10, 11

* Write for sample and prices

SEIBERLING
LATEX PRODUCTS CO.
AKRON 9, OHIO

200-5th Ave., New York
Merchandise Mart, Chicago

When inquiring check CP 5693 on handy form, pgs. 2-3

CHEMICAL PROCESSING





**BY USING
PLATECOIL FOR
TANK HEATING AND COOLING**

YOU SAVE CRITICAL STEEL because "Platecoils" require less than $\frac{1}{2}$ the steel used in pipe coils of the same surface area. A 22" x 119" Platecoil weighs 95 lbs. against 239 lbs. for an equivalent 2" pipe coil. 144 lbs. steel saved. YOU SAVE CRITICAL MAN-HOURS because "Platecoils" are easily installed, cleaned or replaced in minutes . . . No down-time . . . No tank dumping. Many manhours saved.

YOU SAVE MONEY because "Platecoils" cost up to 50% less in initial cost and require less maintenance. Investigate "Platecoils" today.

Send for complete technical manual and descriptive Bulletin No. P54

PLATECOIL
Division
KOID-HOLD MFG. CO.
TAMPA, FLORIDA

When inquiring check CP 5694 on handy form, pgs. 2-3

TRENT
*Reliable...
Low-Cost...
Pre-Heaters*

FOR No. 5 AND No. 6 FUEL OIL

TRENT Electric Oil Heaters are made in three styles—Tube, Blade and Fin Tube—for standard pipe thread or flange attachment. Companion pipe assemblies furnished if desired. Write for Bulletin 74-TA.

Built to Provide TEN Outstanding Advantages

1. Underwriters' approved.
2. Rated 3 to 16 K. W.
3. Voltage 115 — 550 — 3 Phase.
4. Low Watt Density.
5. Minimum Carbonization.
6. Low Maintenance.
7. Designed for 300 lb. pressure.
8. Heavy duty terminals and terminal box.
9. Extra heavy flange or screw thread.
10. Temperature range up to 600 F.

TRENT INC.
Electrically Heated Industrial Equipment
235 LEVERINGTON AVE. PHILA. 27 PA.

When inquiring check CP 5695 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

to 58.3:1. Reducers are made in accordance with recommended practices of AGMA.

Source: Type DB speed reducers are built by Westinghouse Electric Corp., Dept. CP, Box 2099, Pittsburgh 30, Pa. . . . or for more information check CP 5696 on handy form, pages 2 and 3.

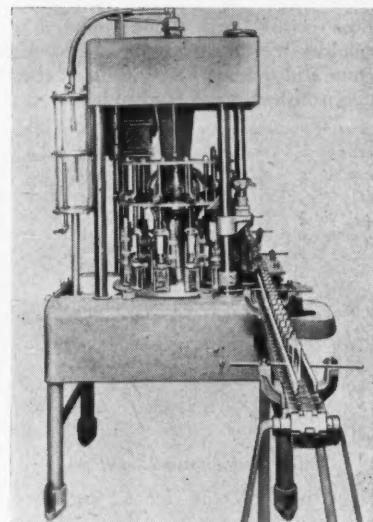
Spilled liquids can't hurt overhead working parts of filling machines . . .

now standard construction in all maker's automatic, rotary units

Uses: Line of fully automatic filling machines for either vacuum or gravity operation. Models having from 12 to 40 spouts have production capacities up to 400 containers (glass, plastic, or tin) per minute.

Features: Previously announced R-48 and R-50 Rotary Filling Machines are well known — the R-48 machine with the entire driving mechanism and vacuum system in the base cabinet, and the R-50 machine with all working mechanisms overhead.

New line has all working mechanisms overhead. This construction was de-



Note absence of working mechanisms beneath latest line of fully automatic rotary filling machines

cided upon to prevent spilled liquids from interfering with working components.

Description: Bottom half of the new machines is entirely free of working parts. Rapid disassembly.

Source: Announcement of the MRM Company, Inc., Dept. CP, 191 Berry St., Brooklyn 11, N. Y. . . . or for more information check CP 5697 on handy form, pages 2 and 3.

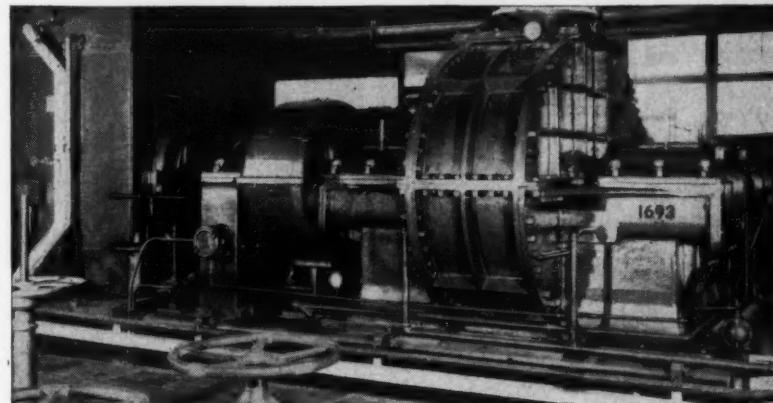
NEW R-C EXHAUSTER

pays its own way

By replacing a 30-year-old battery of three steam-driven gas exhausters with a new, high-capacity, electrically-driven R-C unit, important advantages were gained in a large industrial plant:

1. The one new unit carries the base load.
2. Steam needed for 5 other steam-driven exhausters, carrying partial load, is substantially reduced because of slower speeds.
3. Heat balance in the plant is maintained.
4. Savings in total power cost will pay for the new installation in about one year.

These very satisfactory results were obtained by careful evaluation of all the factors before deciding upon the type of equipment . . . and then by specifying an R-C Rotary Positive Gas Exhauster that will do the work at low operating cost.



Type RCGH Rotary Positive Gas Exhauster, driven by 450 hp synchronous motor. Capacity, 20,600 cfm.



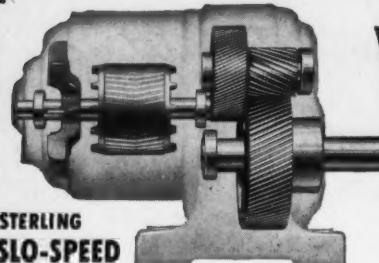
Type OIB Centrifugal Blower in chemical plant. Capacity 19,600 cfm.

ROOTS-CONNERSVILLE
ONE OF THE DRESSER INDUSTRIES



When inquiring check CP 5698 on handy form, pgs. 2-3

power modernization



STERLING
SLO-SPEED

demands
modern
engineering
design

OUTSTANDING FEATURES . . .

Simplified gear system — balanced design — compact — rugged — heavy overhung loads — highly efficient — abundant lubrication — low output shaft — Herringbone Rotor — positive oil seals — protected — streamlined —

through ventilation — quiet operation — AGMA speeds — long life — every unit operates in any position.

Ask for your copy of pictorial bulletin No. F-52 showing Sterling Electric Power Drives Turning The Wheels of Industry.

STERLING ELECTRIC MOTORS

Plants: New York 51, N. Y.; Los Angeles 22, California; Hamilton, Canada; Santiago, Chile.
Offices and distributors in all principal cities.

When inquiring check CP 5699 on handy form, pgs. 2-3



An EASIER WAY
To Remove Packings
Use DURA HOOKS

Rugged, flexible, hand-tools that "work around corners" for removing old packing from stuffing boxes. They SAVE TIME . . . put an end to fussing and cussing . . . improves your manpower efficiency. WRITE FOR DURA HOOK Bulletin DHCP covering SIZES and PRICES.

* All Steel
Flexible
shaft
Tempered
tool steel
corkscrew
bit

DURAMETALLIC
KALAMAZOO



CORPORATION
MICHIGAN

When inquiring check CP 5700 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Filtration operation
visible through pump's
Lucite cylinder . . .

unit handles small volume at high pressure

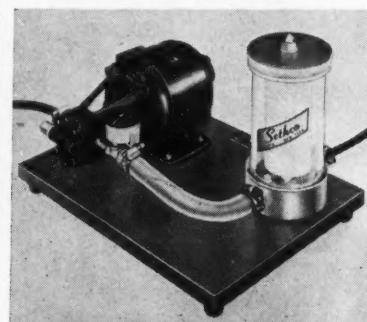
Uses: For filtering light oils, glycerine, glycol, and other organic lubricating liquids in applications requiring pumping small volumes of such materials at high pressures.

Features: Filter cylinder assembly consists of transparent, high temperature Lucite, with stainless steel fittings. Clear view through the Lucite permits full observation of filtration. Filter cylinder holds less than one pint of fluid, all of which is completely recoverable.

Description: May be mounted above liquid level in supply tanks and will operate without manual priming. This power operated filter is equipped with a positive, precision built, self-priming spur gear pump.

Pump consists of an aluminum body and two hardened steel spur gears. It is equipped with a spring-loaded by-pass valve which is set to by-pass the liquid back to the pump when the pressure reaches 40 psi.

Filter tubes consist of specially processed cotton yarn, wound around a stainless steel supporting core. Porous stone and porous carbon filter tubes are furnished for special applications.



Filter pump pressure is 40 psi

Filter tubes may be cleaned and used over and over again by backwashing with solvent. Porous stone tubes may be ignited or immersed in acids for cleaning. Porous carbon tubes may be immersed in concentrated alkalis for cleaning.

Stainless steel and ordinary steel filter assemblies are available where Lucite cylinders might be attacked by solution being filtered.

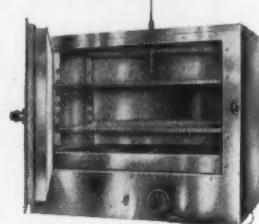
Source: Model LGI-5 filter pump is built by Sethco, Dept. CP, 105-07 150th St., Jamaica 4, N. Y. . . . or for more information check CP 5701 on handy form, pages 2 and 3.

ECONOMY OVENS

Thermostatically Controlled Heat

35°C to 180°C

Construction is of heavy gauge Aluminum inside and outside to provide corrosion resistant finish for many years of hard use. Glass wool insulation precompressed to prevent settling and two inches thick surrounds the working chamber on all sides, including the door.



No. 616

A sealed-in hydraulic thermostat controls the temperature within plus or minus 1/2° C. of the setting.

This unit is a good auxiliary oven, portable because of its light weight, yet sturdy built to stand up under constant use for years.

TWO SIZES ARE AVAILABLE

Model	Interior Size		Exterior Size		Price	
	W.	D.	H.	W.	H.	
615	12"	x	12"	x	12"	\$105.00
616	24"	x	12"	x	12"	155.00

Send for complete information

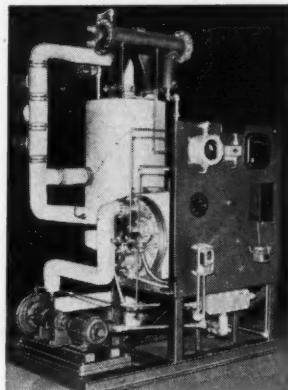
Due to factory expansion, we have openings for several Technical Representatives. Give complete details.

THE ELECTRIC **Hotpack** CO. INC.
5033 COTTMAN AVE. • PHILA. 35, PENNA.

When inquiring check CP 5702 on handy form, pgs. 2-3



ELECTRICALLY
HEATED
UNIT
for
High Temperature
Processes



Supplied complete ready for immediate use in heating and cooling service, this unit is available in capacities from 100,000 to 500,000 BTU per hr. Using Dowtherm it has a temperature range to about 750°F. It also is adaptable to other types of heat transfer fluids for lower temperature operation. Due to the correct design of the heating elements, no thermal breakdown or coking troubles are encountered. Write for Bulletin B-45 on your letterhead.

Struthers Wells
CORPORATION
Warren, Pa.

PLANTS AT WARREN, PA. • TITUSVILLE, PA.

When inquiring check CP 5703 on handy form, pgs. 2-3

CHEMICAL PROCESSING

"SQUEEGEE ACTION" STOPS VALVE LEAKS



There's a conforming "give" in a rubber squeegee that covers all the surface it contacts and wipes dry.

In the same way, there's a "give" in the tough rubber face of DeZURIK valve-plugs that gives them "squeegee action" on the valve seat . . . produces a skin-tight, bone-dry closure. The plug-face conforms and seals even if the valve-seat is worn or if it harbors scale or foreign matter.



A trial installation of DeZURIK Easy-Operating Plug Valves will prove that valve leakage can be stopped! Write for catalog.

**DE ZURIK SHOWER CO.
SARTELL, MINNESOTA**

When inquiring check CP 5704 on handy form, pgs. 2-3



No Paint Needed...

on the New
Waukesha P. D.[®]
Sanitary Pump

CORROSION-RESISTANT
"Waukesha Metal"
NO PEELING PAINT
NO REFINISHING COSTS

Check these Extra-Value features:

New One-Piece O-RING SANITARY SEALS eliminate TEN former parts — Save cleanup time. Positive Displacement, Twin-Blade Impellers provide Non-Agitating, Non-Aerating Pumping. Heavy Duty Ball Bearings for longer service. New Adjustable Ball Feet with high clearance for easy floor sanitation. New Time Savings in Sanitation — no cracks or crevices inside or outside. Available in V-Belt, GEARHEAD, Reeves, or U. S. Variable Speed models, all with or without the Vented Cover.

*P.D. — Positive Displacement — Slow Speed

Write for the complete story NOW!

**WAUKESHA FOUNDRY
COMPANY**
WAUKESHA, WISCONSIN

Waukesha SANITARY PUMPS
Dependable Products by Dependable Manufacturer

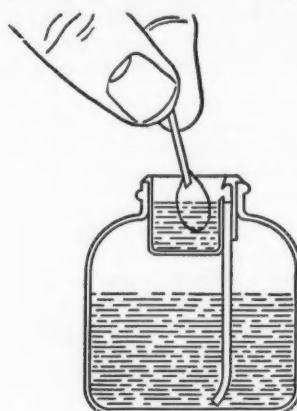
When inquiring check CP 5705 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Dispense exact amounts of liquid into well of plastic bottle . . .

reservoir and tubing easily inserted in bottle neck

Uses: Permits withdrawal of controlled amounts of liquid from polyethylene bottles, without exposing main supply to contamination. Where exact metering is required, device can be graduated. In addition to serving as a dispenser, unit can be designed as an eye-cup or nasal dropper, as a shallow or deep dish, as a receptacle



Well fits into plastic bottle

for storing a hypodermic needle in a sterile solution, or as a miniature mixing bowl where nature of the product indicates it.

Features: Dispenser-bottle combination is virtually indestructible. Will not be damaged or shatter.

Description: Device is made of polyethylene. It consists of a reservoir, or well, joined in a length of tubing. Well is force-fitted into neck of plastic (polyethylene) bottle, and in effect, becomes a bottle within a bottle. Fingertip pressure on the walls of the bottle forces the liquid up the tube, into the well, making it easily accessible for use.

Source: Checkwells for use with Plaxpak polyethylene bottles are made by Plax Corp., Dept. CP, Box 1019, Hartford, Conn. . . . or for more information, check CP 5706 on handy form, pages 2 and 3.

Drawings show speed changer

Variable-ratio speed changer suitable for instruments, computers, timers, etc., is described in Data Sheet 4B, Page 1, issued by Metron Instrument Co., Dept. CP, 432 Lincoln St., Denver 9, Colo. When inquiring specify CP 5707 on handy form, pages 2 and 3.

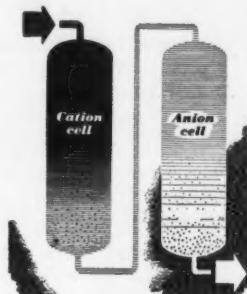
Sure we manufacture **Thickeners, Classifiers,**

and **Heavy Process Equipment . . .**

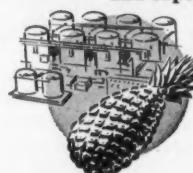
**BUT
DO YOU KNOW WHAT
WE'RE DOING IN**

ION-EXCHANGE?

**FOR INSTANCE,
DO YOU KNOW THAT DORR**



. . . engineered the process, designed the plant, supplied the equipment and supervised the initial operation of the biggest ion-exchange installation ever installed for purification of waste fruit juices?



. . . is installing a two-stage D-I System for the recovery and purification of a new organic chemical; process developed by the client . . . equipment supplied by Dorr?



. . . manufactures a "package" D-I unit ideal for the production of 100 to 1000 gallons per hour of high-purity water at low cost . . . as demonstrated at an East Coast pharmaceutical plant where D-I water is costing but 13 cents per 1000 gallons?



These are typical examples of our work in ion-exchange . . . indicative of the scope of our service and equipment range. If you are currently exploring the possibilities of ion-exchange for new processes or those already established, we will be glad to work with you on any basis you desire. And our ion-exchange facilities are backed by solid experience in chemical engineering.

Bulletin 4081 hits the high-spots of Dorco D-I Systems. Address your request to Ion-Exchange Division, The Dorr Company, Engineers, Barry Place, Stamford, Conn.



D O R R

WORLD - WIDE RESEARCH • ENGINEERING • EQUIPMENT

THE DORR COMPANY • ENGINEERS • STAMFORD, CONN.

Associated Companies and Representatives in the principal cities of the world

When inquiring check CP 5708 on handy form, pgs. 2-3

WOULDN'T YOU LIKE

to say

GOODBYE



TO THESE TROUBLEMAKERS

YOU CAN DO IT WHEN YOU
INSTALL THE

CASH STANDARD
Streamlined TYPE
PRESSURE 1000
REDUCING VALVE

A few typical USER STATEMENTS

"In our business where we must CONTROL OUR STEAM PRESSURE and the curing temperature TO THE FINEST DEGREE, we have found that the CASH STANDARD Type '1000' valves HAVE MET ALL DEMANDS, giving us the type of cure that is so necessary to an acceptable molded product."

—from a Production Manager

"We have confidence in the performance of the CASH STANDARD '1000' and USE IT EXCLUSIVELY with oil firing control assemblies."

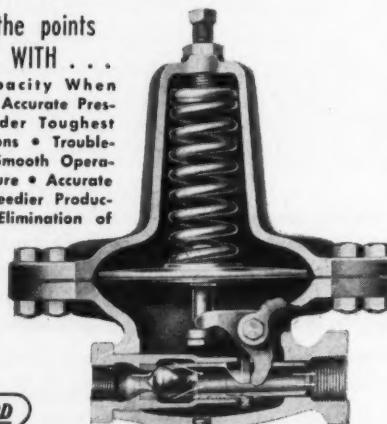
—from an Engineering Corporation

"The two CASH STANDARD Type '1000' pressure reducing valves that we use have, since their installation, GIVEN PERFECT OPERATION WITH NO MAINTENANCE."

—from a Laboratory

These are the points
USERS CHECK WITH . . .

Maximum Capacity When
Needed Most • Accurate Pres-
sure Control Under Toughest
Working Conditions • Trouble-
Free Service • Smooth Opera-
tion • Tight Closure • Accurate
Regulation • Speedier Produc-
tion Results • Elimination of
Failures • Con-
stant Delivery
Pressure • Cost
Saving Opera-
tion • No Spoil-
age • Practically
Zero in Main-
tenance Costs



WRITE FOR BULLETIN 962

A. W. CASH COMPANY
DECATUR, ILLINOIS

When inquiring check CP 5709 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

**Output of metering pump varied
from 24 to 1800 ml/min by
turning control knob . . .**

pump head of compact unit is quickly detached for thorough cleaning or autoclaving

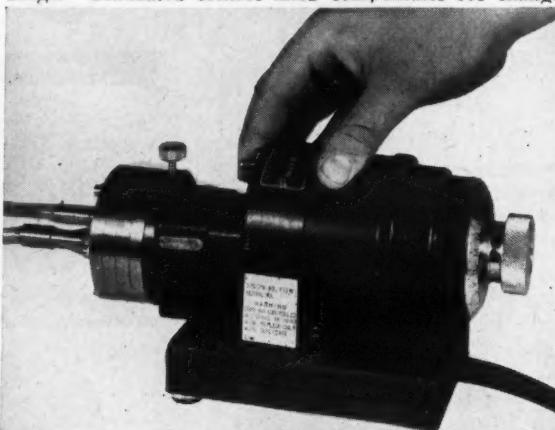
Uses: Dispenses controlled volumes (non-pulsating) of hot or cold, viscous or non-viscous liquids. Most important application is probably in handling biological liquids, pharmaceuticals, and sterile solutions including blood plasma, hormones, vaccines and serums.

Being used with soaps, oils, liquid fats, grease, wax, glue, numerous chemical compounds and demineralized water.

Features: Liquids come in contact only with 18-8 stainless steel and pure carbon. Pump head is easily cleaned or sterilized by circulating proper solutions, and quickly detached for steam autoclaving if desired. Complete unit is compact, measuring overall, 4" wide, 5 3/8" high and 11 1/2" long. It weighs 10 1/2 lb.

Pump can be adjusted while operating for output capacities of 24 to 1800 ml/min by turning convenient speed control knob. Lower capacities are obtained by using a pinch clamp to restrict output volume.

Description: The No. 17952 Maisch metering pump is a precision built, gear type unit with governor controlled motor that provides full power through its entire speed range. Graduated control knob compensates for changes



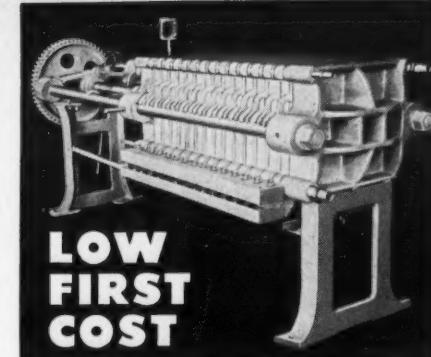
Outputs of 24 to 1800 ml/min can be set by control knob (extreme right) of metering pump

in temperature, viscosity, voltage, constrictions in the line or other variable factors, according to manufacturer. Liquid is dispensed as soon as motor starts; a check valve prevents dripping when motor stops. Maximum head pressure is 10 psi.

High operating efficiency results from pump gears which have specially formed teeth made to close tolerance to assure uniform displacement of liquids. Removable filter screen in pump inlet fitting protects gears against damage by solids in intake liquids. No gaskets are used; metal-to-metal lapped surfaces seal pump mechanism. These seals are designed for temperatures to 275°F.

Motor is housed in an aluminum and zinc die casting. It is rated at 1/25 hp and operates on 115 volt, 60 cycle AC. Unit can be provided with rubber tubing connectors, or with threaded connectors for flared copper or Saran tubing.

Source: Product of Central Scientific Company, Dept. CP, 1700 W. Irving Park Rd., Chicago, Ill. . . or for more information check CP 5710 on handy form, pages 2 and 3.



**LOW
FIRST
COST**

SPERRY FILTER PRESSES

And that's just the beginning of savings.

Sperry Plate Filter Presses offer substantial economies all along the line. Labor cost is low. Economy in floor space and head room. Low depreciation. And this type of filtration equipment handles the widest possible range of applications at maximum efficiency. Plate filter presses—the Sperry type—are the most widely used filters in industry today. Check your own filtration problem with Sperry. Send samples of your material for a test run and estimate. No obligation.

D. R. SPERRY & COMPANY

BATAVIA, ILLINOIS • Filtration Engineers for over 50 years

Eastern Sales Representative:

H. E. Jacoby, M. E., 205 E. 42nd St., N. Y. 17, N. Y.

Phone Murray Hill 4-3581

Western Sales Representative:

D. M. Pilinsky, 833 Merchants Exchange Bldg.

San Francisco 4, Calif., Phone: DQ-0375

**SPERRY
FILTER PRESSES**

When inquiring check CP 5711 on handy form, pgs. 2-3

Automatic Controls That Save Material and Labor

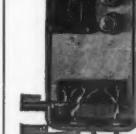
Lumenite Electronic Controls and Timers, designed for all types of automatic operation, have in years of use proven their superior worth.

ELECTRONIC LIQUID with no **LEVEL CONTROLS**, floats or moving parts, control all types of liquid levels to 1/100 inch.

INTERVAL TIMERS control any time operation or process to fractional seconds or hours.

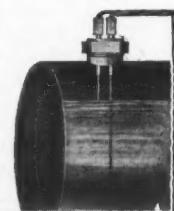
MAGNETIC maintain constant **CONTACTORS** electrical circuits or step up control impulses.

Write for catalog. Give your requirements, please.



**LUMENITE
ELECTRONIC CO.**

407 S. Dearborn, Chicago 5



When inquiring check CP 5712 on handy form, pgs. 2-3

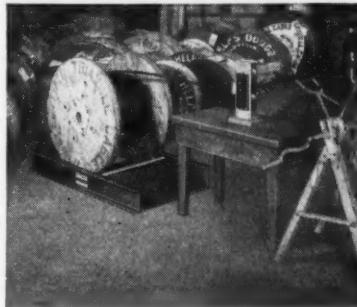
**Material pays-off freely
from reels mounted on
roller-fitted dolly . . .**

two- and four-ton capacity units adjustable for reels from 16" to 8' diameter

Uses: Dollies for accommodating two- or four-ton reels.

Features: Reels don't require spool-axle support, instead spin freely on rollers for paying-out such materials as wire, cable, belting, rope, fence, carpeting, fabrics, etc. Usable with metering and re-wind equipment as shown in illustration. Built-in ramp allows for 'roll on' loading of reels.

Description:
The two 5" rollers which support the reel are ball-bearing mounted in a heavy, welded steel frame. Front roll has a locking pin, and the rear one is adjustable to accommodate reels from 16" to 8' diameter.



Reel dolly

Model 1-S (2-ton) and Model 2-S (4-ton) have overall frame widths of 30 $\frac{1}{4}$ " and 46 $\frac{1}{4}$ ", roller lengths of 25 and 41 $\frac{1}{4}$ ", and weight of 208 and 307 lb, respectively.

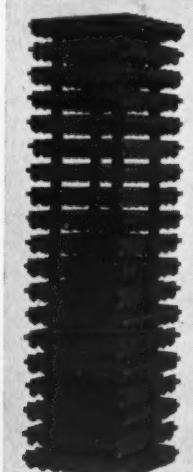
Source: Metzgar Company, Dept. CP, 461 Douglas St., NW, Grand Rapids, Mich. . . or for more information check CP 5713 on handy form, pages 2 and 3.

**Combine carbon and graphite
into corrosion resistant
fabricating material . . .**

refractoriness and controllable thermal conductivity offered in many type units

Uses: Used in fabricating such equipment as coolers, heat exchangers, evaporators, boilers, scrubbing towers, fume ducts and tank linings.

Features: This carbon and graphite material is strong and corrosion-resistant with desirable properties of refractoriness and controllable thermal conductivity. Patented engineering designs for various types of equipment take advantage of the character of the material.



Carbon-graphite
tower packing

handy form, pages 2 and 3.

JULY, 1951

Let **TYGON PLASTIC**
provide the answer to your
TOUGH CORROSION PROBLEMS

Tygon Plastics are resistant to an unusually wide range of corrosives, much more so than rubber or metals. Many formulations are completely non-toxic, may be used safely in contact with foods, drugs or solutions which must be kept free from metal or sulphur pick-up.

Tygon's physical properties are interesting, too. Tygon, in liquid form, can be applied like a paint to metal or concrete; dries to a tough, elastic film that shrugs off corrosive fumes or acid spillage. Solves the problem of protecting structural steel, tanks and other exterior surfaces.

Tygon sheet stocks, 3/32" thick, serve as an effective long-lived lining for tanks, ducts, pipe and other process equipment, particularly for handling strong oxidizing agents such as nitric, chromic, strong concentrations of sulphuric acids, and bleaches.

Tygon cut, molded, and extruded gaskets further extend the range of usefulness of this versatile material.

Tygon flexible plastic Tubing offers a better, simpler way to pipe many corrosive solutions, and gases, as well as liquid foods, and beverages. Available in bores from .120" up to 2", Tygon Tubing may be clear or opaque, as well as outer-braid reinforced for high pressures.

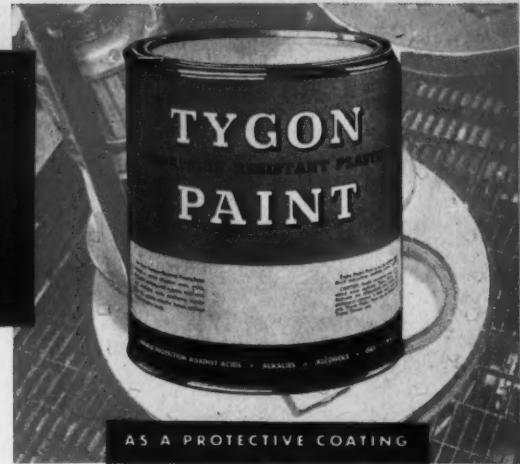


It's worth checking into — one of the many Tygon flexible plastic formulations may well provide the answer to your tough corrosive problems.

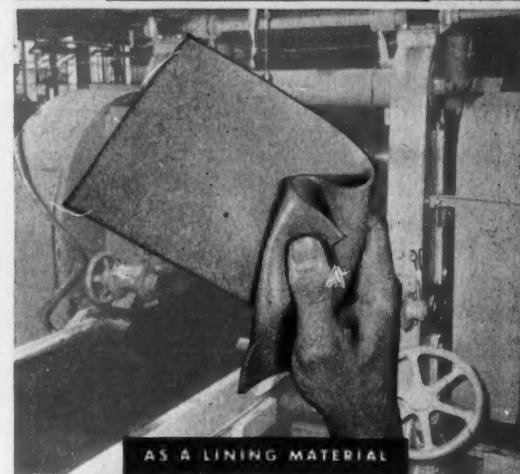


U. S. STONEWARE

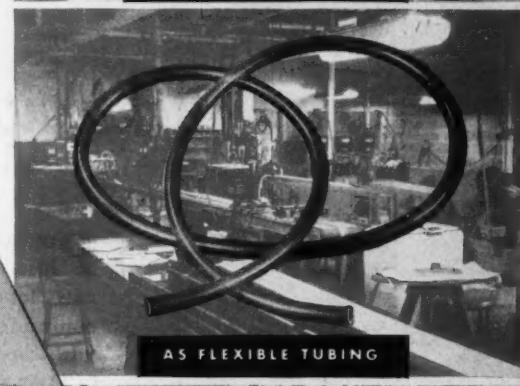
PLASTICS AND SYNTHETICS DIVISION — AKRON 9, OHIO



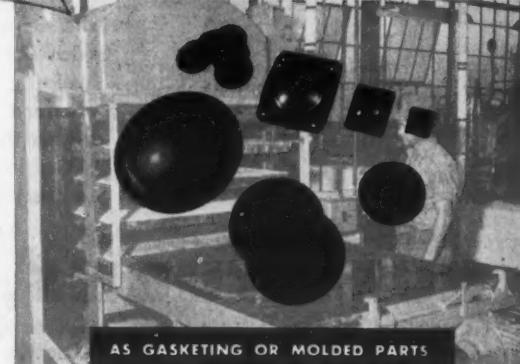
AS A PROTECTIVE COATING



AS A LINING MATERIAL

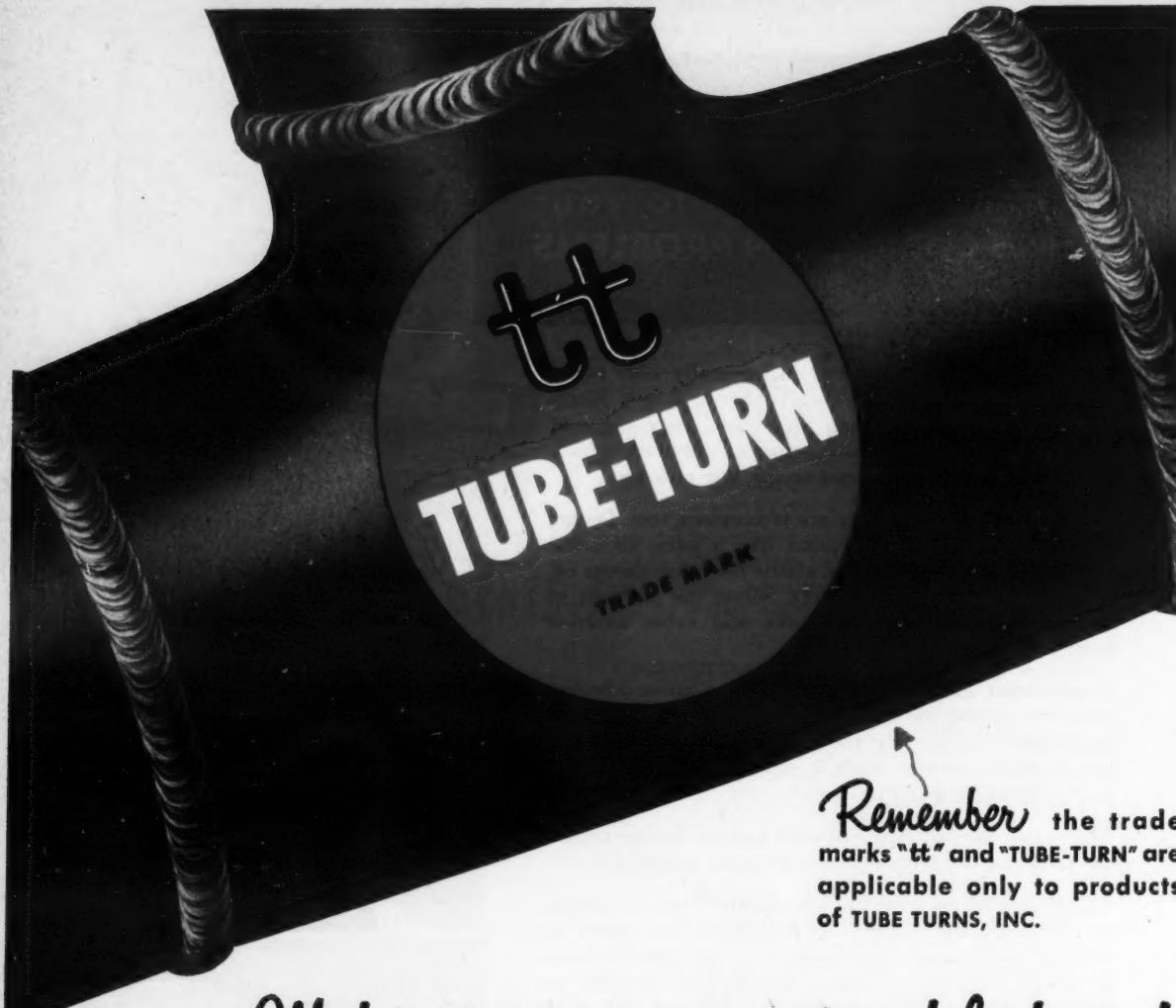


AS FLEXIBLE TUBING



AS GASKETING OR MOLDED PARTS

When inquiring check CP 5715 on handy form, pgs. 2-3



Remember the trade marks "tt" and "TUBE-TURN" are applicable only to products of TUBE TURNS, INC.

Make piping permanent and leakproof

PIPING PERMANENCE is always important but now, more than ever, any installation of piping should be leakproof, maintenance-free and have extra long life. A piping system, big or small, is only as strong as its weakest component. That's why welding fittings, for example, should be specified with care.

TUBE-TURN Welding Tees are drawn from seamless tubing to a barrel shape—the shape every tee wants to assume under pressure. This feature, together with the generous crotch radius and thickness, explains why TUBE-TURN Welding Tees withstand more pressure without yielding. Bursting pressures obtained in tests of representative fittings have averaged more than 25% higher than required by standard codes. Here's extra quality at no extra cost.

Get in touch with your nearby TUBE TURNS' Distributor. You'll find one in every principal city.

"Be sure you see the double tt"

TUBE TURNS, INC.

LOUISVILLE 1,
KENTUCKY

DISTRICT OFFICES: New York • Philadelphia • Pittsburgh • Chicago • Houston • Tulsa • San Francisco • Los Angeles
TUBE TURNS OF CANADA LIMITED, CHATHAM, ONTARIO...A wholly owned subsidiary of TUBE TURNS, INC.

When inquiring check CP 5716 on handy form, pgs. 2-3

Page 118

PROCESSING EQUIPMENT

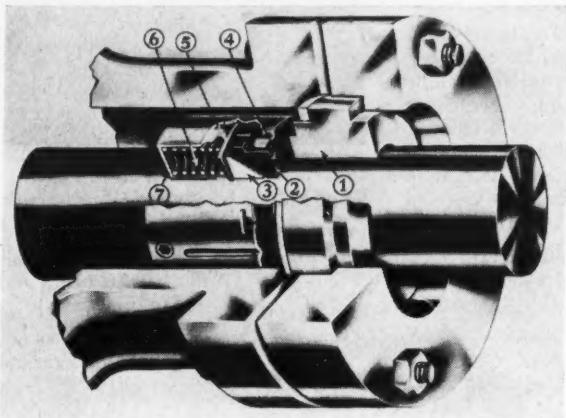
Corrosion, high temperature handled with shaft seal using Teflon ring . . .

can be used at temps to 500°F on rotating shaft in corrosive agitating, pumping

Uses: Mechanical seal is designed for use on rotating shaft applications such as centrifugal pumps, turbines, positive displacement pumps, and agitators. Can be used at temperatures up to 500°F.

Features: Machined Teflon wedge ring is reported to give extremely low friction and high heat resistance as well as chemical inertness. This seal is recommended for corrosive conditions.

Description: Set-screwed metal retainer (7) provides positive drive from shaft to carbon sealing washer (2) through dents that fit into washer notches. Machined Teflon ring (3) is seal between washer and shaft. Ring



Cutaway view of mechanical seal shows Teflon ring (3)

is pre-loaded by action of multiple springs (6). Spring pressure is uniformly distributed by metal disc (5). Lapped face of the stationary seat (1) is mated to lapped, raised face of the rotating sealing washer (2). Spring pressure keeps the faces in constant contact, providing automatic adjustment for wear and shaft end play.

Booklet on the Type 9 Mechanical Shaft Seal furnishes further information.

Source: Seal is manufactured by Dept. L-16, Crane Packing Co., Dept. CP, 1800 Cuyler Ave., Chicago 13, Ill. . . . or for more information check CP 5717 on handy form, pages 2 and 3.

Adds four-pole model to line of relays . . .

unit requires small space for mounting on panel of control assembly; terminals reached easily

Uses: Relay is particularly well suited for control assemblies. Although called a four-pole relay, unit actually has four normally open and four normally closed contacts, allowing circuit arrangement to be changed from normally open to normally closed merely by changing incoming wires to different terminals. When relay is used in circuits of the same polarity, four normally open and four normally closed contacts (total of eight) are available.

Features: All terminals are readily accessible. Relay occupies a small space on panel.

Description: Four-pole relay, Class 8501 Type P04, is addition to manufacturer's line that formerly stopped at



PROCESSING EQUIPMENT

maximum of three poles. It is rated at 10 amperes non-inductive, with inductive ratings of five amperes at 600 volts and 15 amperes at 110 volts. Coils are available for 6 to 600 volts, 25 and 60 cycles.

Each of the four snap action contact mechanisms is self-contained in a melamine case, and may be removed for inspection or replacement by loosening two screws. All contacts are silver-to-silver.

Source: Development of Square D Company, Dept. CP, 4041 N. Richards St., Milwaukee 12, Wis. . . . or for more information check CP 5718 on handy form, pages 2 and 3.

Pits less during welding than protective lens of plain or coated glass . . .

plastic cover lens for welding helmets and goggles

Uses: Plastic cover lens for welding helmets and welding goggles.

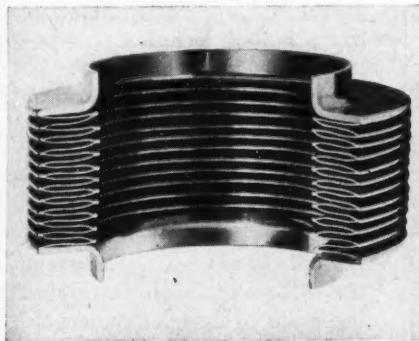
Features: Will withstand pitting for much longer periods than either plain glass or coated cover glass.

Description: "Spatterproof" cover lens is available in 2 x 4½", and 50 mm round sizes — 0.040" thick.

Source: Development of Willson Products, Inc., Dept. CP, Reading, Pa. . . . or for more information check CP 5719 on handy form, pages 2 and 3.

Expansion-type bellows fulfill many temp, pressure, and corrosion needs . . .

convoluted metal diaphragms are welded to form complete assemblies; bellows plus fittings also available



Uses: Expansion-type bellows are recommended for absorption of vibration and lineal expansion in applications involving constant high pressures, corrosive liquids and gases,

and extreme temperatures in sealed piping systems. Available in 1 to 5" ID sizes.

Features: Supplied in plain and stainless steels, brass, bronze, monel, and inconel to suit individual heat, pressure, and corrosion requirements.

Description: Construction is of convoluted metal diaphragms welded into complete units. Height of convolutions themselves varies according to the degree of flexibility required within a specified length, and wall thicknesses may be increased depending on pressure requirements.

Bellows are supplied with or without sleeve liners. In addition to the bellows themselves, assemblies complete with any types of standard or special fittings are available.

Source: Development of Titeflex, Inc., Dept. CP, 500 Frelinghuysen Ave., Newark 5, N. J. . . . or for more information check 5720 on handy form, pages 2 and 3.

The Quick, Economical solution to Heating Gases

and

Process Air



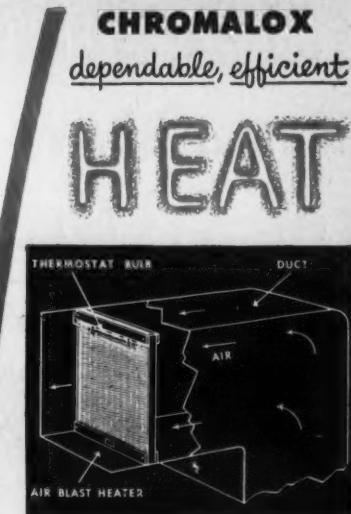
CHROMALOX Electric Heaters

CHROMALOX offers you a wide variety of electric heaters to fit the temperature requirements of your jobs and the physical dimensions of your equipment.

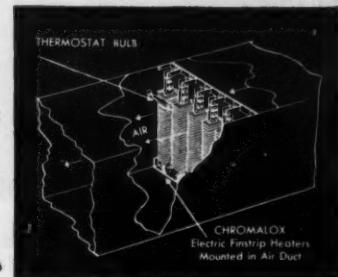
CHROMALOX Units are the dependable, efficient answer to heating recirculating ovens. They quickly and simply convert air-conditioning systems to central heating systems. Units are available for heat treating ovens, annealing ovens, core and armature drying ovens and similar applications. Operating temperatures up to 1000° F. are easily achieved and accurately maintained by thermostat control. Standard units are quickly installed in existing ducts and multiple circuits can be supplied for modulating the heat output.

CHROMALOX

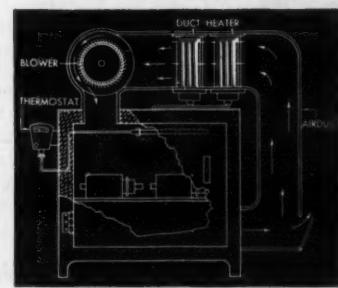
Electric Heat for Modern Industry



(A) AIR BLAST HEATER slides into duct for heating air under forced circulation. Two or more heaters may be mounted in same duct. Built-in bus-bar easily connected for single or multiple-circuit control.



(B) FINSTRIP HEATER for drying, curing, space heating and other applications requiring heat under forced circulation. Heat is quickly dissipated by parallel-fin construction with minimum air-friction loss. Flanges simplify mounting.



(C) DUCT HEATER mounted in recirculation oven for temperatures from 400° to 1000° F. Multi-circuit units allow varying heat outputs. Moisture-proof construction is ideally suited to many jobs.

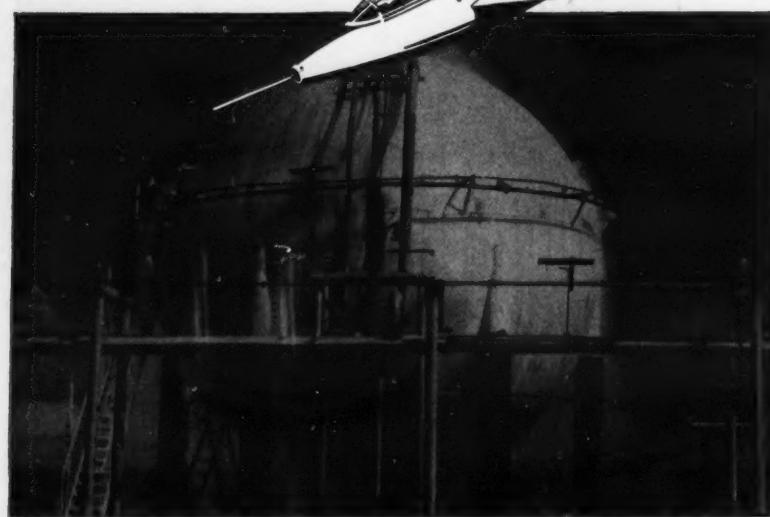
Want more
Know-How?

Send for Catalog 50 and the useful booklet of application ideas "100 Ways to Apply Electric Heat". They are both yours without obligation.

Industrial Heating Division
EDWIN L. WIEGAND COMPANY
7517 Thomas Boulevard
Pittsburgh 8, Pa.

When inquiring check CP 5721 on handy form, pgs. 2-3

You get SUPERSONIC ACTION with a BLAW-KNOX FOG SYSTEM



Deluge Systems, Wet Pipe Systems, Dry Pipe Systems, Water Spray and Fog Systems, Rate-of-Rise Sprinkler Systems, and Foam and Carbon Dioxide Extinguisher Systems.

"LITTLE
JOEY SPRINKLER"



At the very first appearance of fire (inside or outside your plant) the Blaw-Knox rate-of-rise thermostat instantly sounds an alarm and, with the speed of electricity, starts a dense, quenching fog of water at the danger spot—smothering the fire and protecting adjacent equipment. Blaw-Knox Fog Nozzles have no screens to clog, do not require treated water and maintain their effective spray pattern even at reduced pressures.

At your request a Blaw-Knox Engineer will make a survey of your fire hazards, prepare a preliminary layout of the system that will give the utmost in fire protection, and submit an estimate of costs—without obligation. Blaw-Knox Fire Protection Systems carry the approval of all insurance underwriters.

BLAW-KNOX SPRINKLER DIVISION
OF BLAW-KNOX CONSTRUCTION COMPANY
829 Beaver Ave., N.S., Pittsburgh 33, Pa.
Offices in Principal Cities

**FIRE
PROTECTION
SYSTEMS**

When inquiring check CP 5722 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Provides increment starting of motors having two parallel windings . . .

part winding method of starting does not produce objectionable current surges

Uses: Starter for use with motors which employ two separate parallel windings, star or delta, to obtain increment starting. Can be used whenever reduced voltage starting is necessary because of power company limitations and where only two increments of starting are needed. Common application in air conditioning and refrigerating systems.

Features: Use of part winding starting does not produce objectionable current surges obtained with autotransformer starting as the motor is not disconnected from the line during starting period.

Description: The AC Part Winding Starter, Bul 736, consists of two across-the-line starters and a pneumatic timing mechanism mounted below one starter and operated by the starter's solenoid plunger. Pressing the "start" button immediately closes first starter which energizes one of the two parallel windings. Meanwhile, timer is in operation and, after a few seconds, energizes the second starter. With both starters closed, full line current is supplied through motor through both windings, each using 50 percent of the total current drawn.

Source: Allen-Bradley Company, Dept. CP, Milwaukee 4, Wis. . . . or for more information check CP 5723 on handy form, pages 2 and 3.

Combustion efficiency is 80% for steam generator . . .

automatic "packaged" unit is available in sizes from 690 to 10,350 lb steam per hr

Uses: Steam generators for loads of 690 to 10,350 lb steam per hr. Designed for oil or gas firing, or for combination oil and gas.

Features: "Packaged" units are mounted on steel skids that may be located on level and solid floors, without foundation construction. Operation is fully automatic. All controls operate from single pushbutton control station. Devices for complete operating safety are standard equipment. Units are designed with minimum heating surface of five sq ft per boiler hp. Combustion efficiency is 80%. Thermal efficiency is 80% when oil fired, 75% when gas fired.

Description: The Ticosteam generator is essentially a three-pass, constant furnace pressure, forced draft, fire tube, horizontal boiler which is fitted with burners of special design to permit use of any desired type of gas or fuel oil, or combination. Unit is ready to operate when connected to fuel, water and electrical lines. No stack is required; a vent through the roof is sufficient. Maximum

part winding method of starting does not produce objectionable current surges

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Please send us Special REFRactories Bulletin
B-749 and Sup. K-378.

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City..... Zone..... State.....

Att. of: Name..... Title.....

When inquiring check CP 5724
on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

flame efficiency and smokeless operation are assured under all firing conditions, according to the manufacturer, by fully automatic devices that maintain an intimate mixture of air and fuel.

Safety features include: Fireye combustion control head with alarm provision; thorough purge before ignition and also after combustion; dual low-water cut-off interlocking safety switches on pilot and main gas lines; motorized main gas valve; high pressure gas regulator; and gas electric ignition.

Bulletin B-3100 contains complete details on the ten models in the line.

Source: The Titusville Iron Works Company, Dept. CP, Titusville, Pa., is the maker . . . or for more information check CP 5725 on handy form, pages 2 and 3.

600 cu ft of resin granules blended in 4-5 min . . .

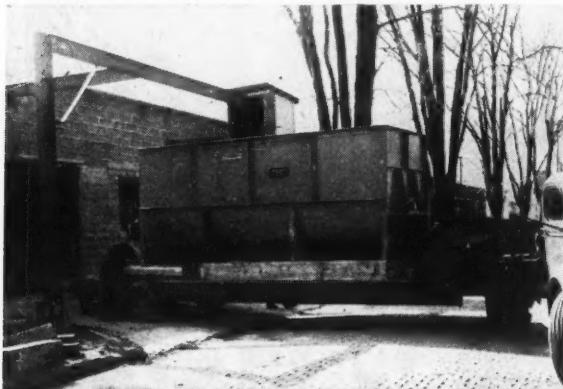
paddle type mixer won't fracture particles; full load can be discharged in less than minute

Uses: Mixing dry, semi-wet or liquid materials. Capacity is 600 cu ft.

Features: Manufacturer reports that unit thoroughly mixes and blends 600 cu ft of synthetic resin granules in four to five minutes, without fracturing or otherwise injuring particles. Full load may be discharged in less than a minute.

Description: Mixer is of paddle type design which kneads material as well as mixing and blending it. Paddles are mounted on 4" square solid steel shaft that revolves at about 25 rpm. Unit is fabricated of welded and bolted construction, including stainless steel inside parts where required.

Drive consists of large bull gear mounted on paddle shaft and driven by V-belt from 75 hp motor. Overall dimensions of complete unit are 19' long x 7' wide x 10' high.



600 cu ft paddle type mixer

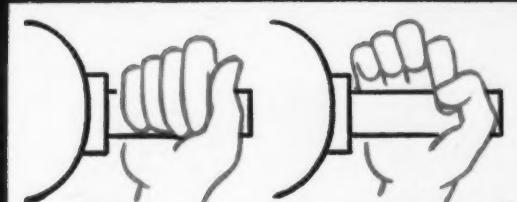
This height allows 40" clearance between floor and discharge opening. Additional clearance is provided by increasing height of end supports.

For dry and semi-wet materials, discharge opening is equipped with sliding door operated through rack and pinion. For liquid materials, discharge consists of globe type valve.

Source: Development of Multiplex Machinery Corporation, Dept. CP, Elmore, Ohio . . . or for more information check CP 5726 on handy form, pages 2 and 3.

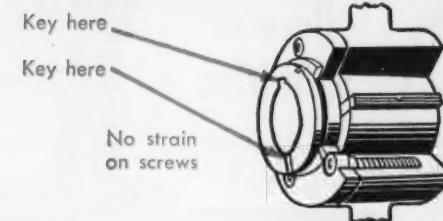


ONE PIECE MOUNTING—Bushing and sheave go on together. Alignment is easy. Sheave is on right first time.



FULL CIRCLE GRIP — Bushing split full length. Collar is separate. Shaft gripped full length around full diameter.

TEXROPE
*Greatest Name in
V-Belt Drives*



POSITIVE DRIVE — Bushing is keyed to both shaft and sheave. No slipping. No sheared screws. No jammed bushings.

USE FAST-MOUNTING Magic-Grip SHEAVES

Full Grip...No Slip!

MAGIC-GRIP SHEAVE is the fastest mounting sheave you can buy. And you can demount it just as fast. It runs true, will not slip or jam. It always comes off easily without hammering, forcing, or distortion.

Best of all it costs no more than an ordinary sheave. Even if you don't change sheaves often, you should have *Magic-Grip* sheaves on every drive to eliminate the possibility of shaft and bearing damage when ordinary sheaves are hammered or pried on or off. Sizes 1 to 250 hp.

WIDEST V-BELT LINE

You can get everything you need for your V-belt drives from one reliable source. Allis-Chalmers offers the broadest line of V-belts, speed changers, and standard and variable speed sheaves in the industry. And you get the extra engineering skill that comes from having more industrial V-belts, installations than any other manufacturer.

Get the 120 page *Texrope Pre-Engineered Drive Manual 6956* from your A-C Authorized Dealer or Sales Office, or write Allis-Chalmers, Milwaukee 1, Wisconsin.

A-3240

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MOTORS — $\frac{1}{2}$ to 25,000 hp and up. All types.

CONTROL — Manual, magnetic and combination starters; push button stations and components for complete control systems.



PUMPS — Integral motor and coupled types from $\frac{1}{4}$ in. to 72 in. discharge and up.

ALLIS-CHALMERS

When inquiring check CP 5727 on handy form, pgs. 2-3

**It's a cinch to ream
pipe with this**

RIDGID

**Extra-long-taper
reamer won't thin,
flare or
split pipe**



• **RIDGID** LonGrip reamers have that extra-long-taper that cleans the burr smoothly out of pipe or conduit almost without effort. Just a few light ratcheted strokes do the job. Furnished complete with ratchet handle. No. 2 Reamer unit sold separately for use in **RIDGID** 00R small ratchet die handle. Two sizes, No. 2, $\frac{1}{8}$ " to 2" pipe; No. 3, $\frac{3}{8}$ " to 3" pipe. These **RIDGID** new type pipe reamers really do save your time, work — and pipe. Ask for them at your Supply House.

Buy reamer complete or reamer unit separately for use with 00R die handle.

RIDGID
Work-Saver Pipe Tools
THE RIDGE TOOL CO., KETTERING, OHIO

When inquiring check CP 5728 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

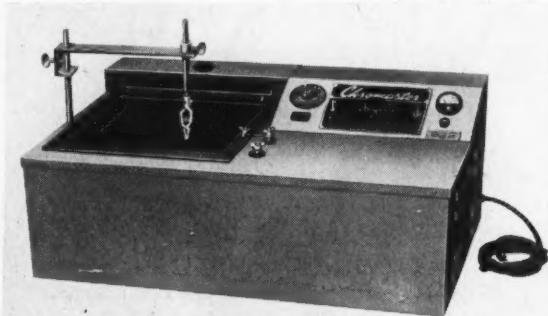
**Few minutes plating adequate
to increase average life of
cutting tools, wear parts . . .**

bench unit plates up to 25 sq in, operates on 110-120 volts ac, 60 cycle

Uses: For precision industrial hard chrome plating directly on cutting tools and wear parts.

Features: Process is designed to multiply cutting life after only three minutes of plating time. Bench mounted unit is compact, self-contained and easy to operate. It has a capacity for hard chrome plating surfaces totaling 25 sq in max at the recommended current density of 2 amps per sq in.

Description: Unit consists essentially of a built-in selenium rectifier power supply, rectangular plating tank



Bench type chrome plater measures 14 x 32 x 19"

and instrument panel. Current control is by means of a continuously adjustable autotransformer.

Chromasol, a non-critical, economical plating solution developed for use in this unit, operates at room temperature. It is shipped as a concentrated liquid ready for dilution with water prior to use in applying chrome deposits directly on industrial steels, cast iron and most non-ferrous metals. Unit operates from 110-120 volts ac, 60 cycle.

Source: Model A-50 Chromaster is built by Ward Leonard Electric Co., Dept. CP, South St., Mount Vernon, N. Y. . . or for more information check CP 5729 on handy form, pages 2 and 3.

**Pre-compressing hanger springs
gives great load-variability
plus increased head-room . . .**

excessive compression prevented by travel stop; assembly automatically converted to rigid hanger

Uses: For supporting piping and allied equipment subject to positional changes resulting from thermal expansion of the equipment to be supported.

Features: Excessive compression of springs is prevented, in a positive manner, by a "solid-travel" stop that arrests the piston plate before the spring is compressed to its shut-height position, thereby converting the assembly into a rigid hanger. This is in accordance with paragraph 610 (b) of the pressure piping code.

Pre-compression of springs, in the ratio approximately 63% of the rated-load deflection, permits the use of springs with a relatively great deflection range. As a result, an excellent load-variability factor is achieved along with the low head-room so desirable in many installations.

Description: Line of variable-support hangers is com-

POUR SAFER & FASTER

Eliminate splashing and spilling of acids with the new GS Saftee-Flo Carboy Tilter. Advanced design and rugged steel frame assure dependable service.

**Type GS 11 TILTER, with
pouring spout . . . \$24.95
complete**

SMOOTHER FLOW provided by acid-resistant pouring spout at rates up to 5 gal. per minute.

**Type GS — Pouring Spout
only . . . \$4.95**



BIG, NEW SAFETY CATALOG SENT FREE ON REQUEST



48 pages; hundreds of safety items completely described and illustrated. Price list included.

ALL ORDERS SHIPPED FROM PHILADELPHIA
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**GENERAL SCIENTIFIC EQUIPMENT CO.
2709 W. HUNTINGDON ST., PHILADELPHIA 32, PA.**

SAFETY EQUIPMENT FOR EVERY HAZARD

When inquiring check CP 5730 on handy form, pgs. 2-3



SPRACO NOZZLES

Write for NOZZLE CATALOG to
SPRAY ENGINEERING CO.
125 CENTRAL STREET • SOMERVILLE 45, MASS.

When inquiring check CP 5731 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

prehensive in its scope, embodying 48 load-travel combinations. These cover a load-travel range of from 1-1/2 to 6". Range of rated loads extends from 80 to 5,418 lb. In addition to 48 load and travel-range combinations, each size can be supplied with several different conventional types of attachment.

Rated loads increase at a constant rate (capacities increasing approximately 33% to the next largest size) throughout the entire line of 16 sizes. This, coupled with the liberal load overlapping provided, assures absence of blind spots for any load of 80 lb, for the smallest size, and 5,418 lb, for the largest size — when vertical movement of the supported load does not exceed 50% of the full length of the travel scale, and regardless of whether the movement is "up" or "down" from the cold position of the piping.

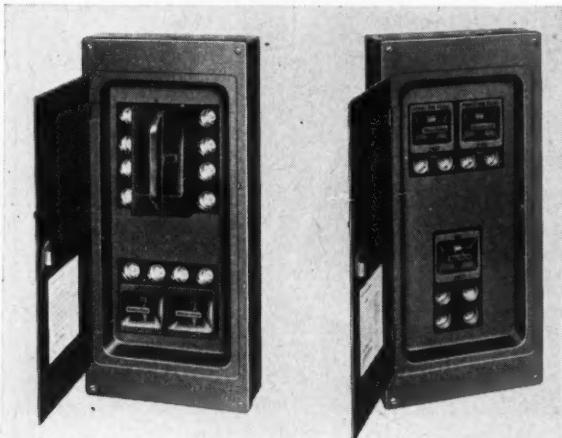
Source: Dept. 3, Bergen Genspring Corp., Dept. CP, 15 Park Row, New York 7, N. Y. . . . or for more information check CP 5732 on handy form, pages 2 and 3.

Entrance equipment serves small capacity heating or lighting circuits . . .

series and parallel mains types easy to install
Uses: For such loads as lighting and heating.

Features: Flush and service type covers are interchangeable. Interiors are mounted on removable pan to facilitate mounting and wire pulling. Solderless connectors, tangent knockouts and engineered gutters contribute to easy installation.

Description: Series type (left view) utilizes 100 ampere fusible pullout disconnect which controls all



100 ampere fusible service entrance equipment

branch circuits. These devices are available with two 220 volt, 30 or 60 ampere branch circuits and either 8, 10 or 12 plug fuse, 110 volt circuits.

Parallel mains type (right view) connects the three 220 volt, 30 or 60 ampere pullout circuits in parallel, thus eliminating the need for a main disconnect. One of the pullouts controls 4, 6 or 8 plug fuse, 110 volt circuits for such loads as lighting. Other pullouts control other 220 volt circuits.

Source: Square D Co., Dept. CP, 6060 Rivard St., Detroit 11, Mich. . . . or for more information check CP 5733 on handy form, pages 2 and 3.

**SOLID
PORCELAIN**

Lapp
PORCELAIN VALVE

● Valves of Lapp Chemical Porcelain are known in the chemical processing industry as the most effective for handling many corrosive chemicals. And porcelain is the body material itself, not a paint or enamel. The porcelain is dense, homogeneous, non-porous, through-and-through acid resisting. Not even is the corrosion resistance of this material due to a glaze. In fact, the smooth operation and pressure-tight seal

is the result of machining—grinding and lapping the solid porcelain—which is finished to an accurate, mirror-like smoothness.

In many points in the chemical industry, Lapp valves have been found the only satisfactory answer to the problem of handling corrosive chemicals. Perhaps they can save trouble for you, too. Lapp Insulator Co., Inc., Process Equipment Division, 422 Maple St., LeRoy, N.Y.

Lapp
PROCESS EQUIPMENT

CHEMICAL PORCELAIN VALVES • PIPE • RASCHIG RINGS
PULSAFEEDER CHEMICAL PROPORTIONING PUMPS



**CHEMICAL PORCE-
LAIN BULLETIN
NOW AVAILABLE**

Chemical and mechanical characteristics of Lapp Porcelain; specifications and dimensions for valves, pipe, raschig rings, towers; installation procedure and maintenance hints.
Write for your copy.

DAVENPORT

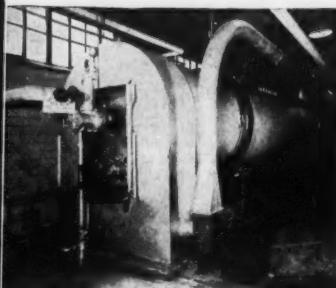
De-Watering
Presses and
Screens

ROTARY

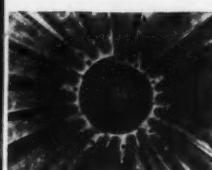
Steam Tube,
Hot Air and
Direct Fire
Dryers.

Water Tube
and Air
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"DAVENPORT" STEAM TUBE DRYERS



Drying Spent Grains In Brewery.



Steam Tubes.

Davenport Steam Tube Dryers have been accepted year after year as the most efficient and best engineered dryers available for dehydrating semi-solid materials. Lower your drying costs with a Davenport. Write for our complete catalog.

DAVENPORT MACHINE and FOUNDRY CO.

Davenport 4

Iowa

When inquiring check CP 5735 on handy form, pgs. 2-3

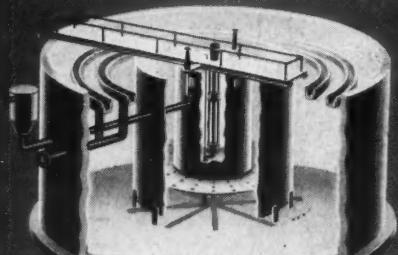
the CLARIFLOW — WITH INDEPENDENTLY-OPERATED MIXING, FLOCCULATION, STILLING AND SEDIMENTATION ZONES

A notable improvement over conventional short-retention water treatment units. Its control over short-circuiting, control over each function and control of sedimentation through low weir rates mean improved effluent... higher filtration rates... longer filter runs... better industrial waste recovery and treatment.

WRITE FOR BULLETIN 656

FOR

- WATER SOFTENING
- TURBIDITY AND COLOR REMOVAL
- INDUSTRIAL WASTE TREATMENT



WALKER PROCESS EQUIPMENT INC.
FACTORY • ENGINEERING OFFICES • LABORATORIES
518 HANKES AVE., AURORA, ILLINOIS

When inquiring check CP 5736 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

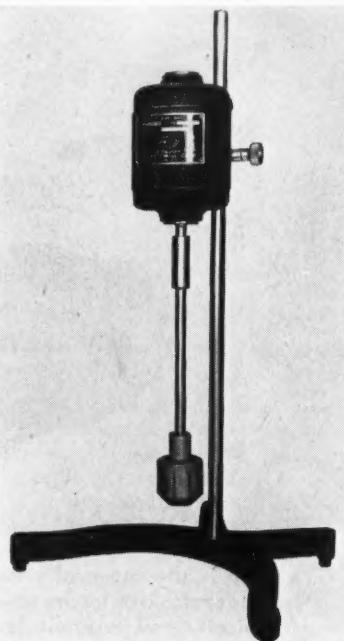
Difficult mixing done without propeller ...

mixer forces liquid through slots for shearing, turbulence

Uses: Tests show that this mixer is faster than conventional methods for emulsification, dispersion, intimate mixing, and agitation. It can also be used to speed reactions and dissolution of hard-to-dissolve materials.

Features: Mixer uses a hollow cylinder with narrow slots. When this is rotated at high speed, centrifugal force causes liquid to emerge through slots under pressure.

Description: Cylinder is attached to shaft connected directly to motor.



Mixer uses centrifugal principle

Flexible shafts can also be supplied. Unit is fitted for mounting on ordinary laboratory ringstand.

Premier Dispersator is designed to be effective with liquid-liquid, liquid-solid, and liquid-gas systems. In all cases, turbulence and shearing of the liquid take place.

Source: Dispersator is manufactured by Premier Mill Corp., Dept. CP, 218 Genesee St., Geneva, N. Y. ... or for more information check CP 5737 on handy form, pages 2 and 3.

Booklet features special lighting

Lighting of problem areas such as bins, stacks, and dust- and vapor-tight installations is featured in 16-page booklet. Standard lighting methods are



STRAINERS AND FILTERS AVAILABLE IN ALL TYPES AND SIZES

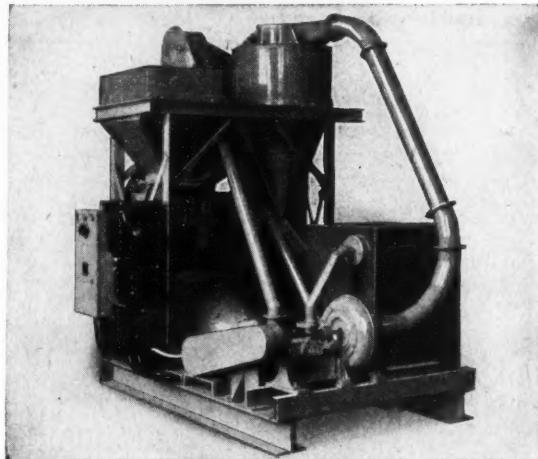
A longer lasting, accurately made filter or strainer increases your profits at every application. The skilled craftsmanship and selected quality materials used in the manufacture of Cleveland Wire Screen is your yardstick for discriminating buying. Custom designed strainer elements are produced in small or large production runs from Chrome Nickel or Copper Alloys. Write for Strainer and Filter Bulletin No. 7.

A CLEVELAND WIRE SCREEN FOR EVERY PURPOSE

THE CLEVELAND WIRE CLOTH & MFG. CO.

3574 E. 78 STREET • CLEVELAND 5, OHIO

When inquiring check CP 5738 on handy form, pgs. 2-3



"PACKAGED" DRY GRINDING SYSTEM

Make power connections only and the Hardinge Dry Grinding Unit is ready to perform. Self-contained and portable. 8' high. Complete with Constant-Weight Feeder, Conical Mill, Loop Classifier, dust collector, product collector, and "Electric Ear" grinding control. Similar model for wet grinding. Bulletin AH-373-13.

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122 E. 42nd St. 24 California St. 205 W. Wacker Dr. 2016 First Ave. 200 Bay St.
When inquiring check CP 5739 on handy form, pgs. 2-3

CHEMICAL PROCESSING



6 Cubic Feet of Controlled Air

When humidity and temperature are important here is a cabinet that provides about 6 cubic feet of controlled air . . . both dry and wet bulb temperatures can be maintained within 1° F. as long as the unit is in operation.

The air is constantly circulated and uniform conditions are maintained automatically; heated by an electric coil, cooled by a coil of water (or other coolant), humidified by a spray chamber, dried by a mechanical device needing no attention.

Units are available with temperature ranges from 40° to 140° F.

AIRE-REGULATOR

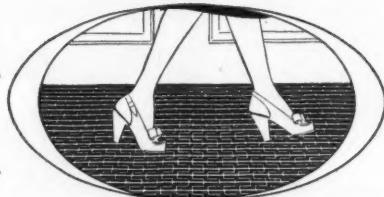
Constant Temperature and Humidity Cabinets
Now in use by many prominent laboratories in food, research, paint, pharmaceuticals, etc.—names on request. Write for bulletin and tell us your requirements.

Food Technology, Inc.

5911 Northwest Highway
Chicago 31, Illinois

When inquiring check CP 5740 on handy form, pgs. 2-3

THE SAFE OPEN STEEL FLOORING IS TRI-LOK



No object over $\frac{1}{2}$ square inch can pass through super-safe U-Type Tri-Lok Flooring. It is unsurpassed for plant installation, walkways, loading platforms. Maximum strength, air and light with minimum weight. Efficient distribution of concentrated loads. Write for Bulletin KA 1140.

The Tri-Lok Company is also equipped to furnish riveted and Tri-Forge welded open steel flooring. Tri-Lok can be furnished in a variety of metals, including aluminum alloy, stainless steel, etc.

DRAVO CORPORATION

National Distributor for the Tri-Lok Company

Drive Building, Pittsburgh 22, Pennsylvania
Sales Representatives in Principal Cities



When inquiring check CP 5741 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

evaluated for type of light, efficiency, lamp life, maintenance, and job suitability. Also covers a variety of normal lighting applications.

Booklet B-4727 is issued by Westinghouse Electric Corp., Dept. CP, Box 2099, Pittsburgh 30, Pa. When inquiring specify CP 5742 on handy form, pages 2 and 3.

Wide range of models simplifies selection of pilot lamps . . .

neon-types have operating range from 75 to 250 volts

Uses: Neon-type pilot lamps for panel mounting. Lens is available in a variety of colors. Operating range is from 75 to 250 volts, either AC or DC.

Features: Body is a nylon tube which slips through mounting panel



Neon-type pilot lamps offered in wide range of models

and is held in place with a special speed nut. Withstands vibration and shock, as well as voltage overloads.

Description: Omni-Glow Model 1010 is supplied with $4\frac{1}{2}$ " leads, $\frac{1}{2}$ " stripped and tinned for easy electrical hook-up. Special models are available with ring tongue terminals, special leads, other operating voltages, and different degrees of light intensity.

Source: Announcement of Industrial Devices, Inc., Dept. CP, Edgewater, N. J. . . or for more information check CP 5743 on handy form, pages 2 and 3.

Descriptive bulletin covers explosion-proof bells

Four-page bulletin on explosion-proof bells describes operational and constructional features, design and assembly detail, Underwriter's Approvals, ordering information, etc. Various types are illustrated with sectional views. Bulletin EP134 is issued by Signal Engineering and Mfg. Co., Dept. CP, 154 W. 14th St., New York 11, N. Y. When inquiring specify CP 5744 on handy form, pages 2 and 3.

GLASS

Woven entirely from Glass Fibers

Filter

As Chemically Resistant as Chemical Glass Itself

Cloths

Various Degrees of Porosity

Are you filtering or would you like to filter strong acid or oxidizing solutions at high temperatures?

Are your conditions in these respects too severe for other synthetic fibers?

If so, NFM Woven Glass Filter Media may well be your answer. You can purchase our Glass Filter Cloth in rolls ranging in widths from 26" to 64" (100 linear yards or more) and in any length of the standard 38" width which is a stock item. Several different weaves are available, ranging between a dense, tight-filtering surface and a rather porous one.

* * *

If you want the cloth made up into filter element covers, anode bags, collector bags, etc., we are in position to do this at nominal cost...considerably less cost than when they are prepared in your plant. They'll be "all glass", too. We use glass thread for sewing.



Weavers of Industrial Filter Media for over Forty Years
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Western Office & Factory: Salt Lake City 1, Utah

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Houston, Texas
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Oslo, Norway
Nicolai Friis
Johannesburg, South Africa
Edward L. Bateman

When inquiring check CP 5745 on handy form, pgs. 2-3

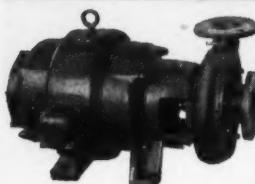


"You never miss the water 'till the well runs dry"

WEINMAN pumps assure uninterrupted service



Two Stage Split Case Pump for high-head service.



General Service Unipump for use where space is limited.



Non-clogging type "U" for liquid carrying solids.

Representatives in Principal Cities

Built by Centrifugal Specialists
The WEINMAN Pump Mfg. Co.

294 SPRUCE STREET • COLUMBUS 8 • OHIO

When inquiring check CP 5746 on handy form, pgs. 2-3

Page 126

PROCESSING EQUIPMENT

Adjusting dispenser speed gears hand labeling to production rate . . .

delivery of pressure sensitive labels from small motorized device ranges up to 150 linear inches

Uses: For feeding pressure sensitive labels to operator in a range of speeds so that hand labeling operations can be geared to production line rates.

Features: Dispenser can be set to any predetermined speed from equivalent to 10 to 150 linear inches of maker's pressure sensitive labels per minute. Labels are ready to apply without moistening. Where painstaking label application is required, extremely slow speed of dispenser is a distinct advantage. When starting and stopping are important, unit provides split-second positive action at both ends of the cycle, and automatically resumes pre-determined speed of feed when restarted.



Feeds pressure sensitive labels

Description: Wide range of variable speeds permit synchronization to practically all production lines having either continuous or intermittent operation. When intermittent delivery of labels is desired, dispenser can be stopped and started faster; it automatically resumes a pre-determined rate of speed. Stop and go action is controlled by either foot or finger pressure of the operator.

Dimensions of dispenser are 6-5/8 x 7-1/8 x 13-3/4" overall. Label delivery slot measures 3". Housing is of aluminum alloy and bearings are self-lubricating. Wear strips are hard steel. Universal 1/25 hp motor may be plugged into either AC or DC 110-120 volt outlet.

Source: Model E-350 label dispenser is a development of Avery Adhesive Label Corp., Dept. CP, Monrovia, Calif. . . or for more information check CP 5747 on handy form, pages 2 and 3.

No coolant or dirt penetrates gasketed enclosure of tool and machine controller . . .

made in NEMA sizes 1-5, ratings to 200 hp, 440 volts polyphase; mounts on external brackets

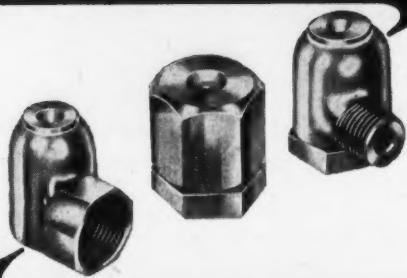
Uses: For starting and control of machine tools, presses, and other equipment used in mass production industries.

Features: To keep out dirt, oil, and splashing coolant, starter's NEMA type 12 enclosure has a continuous neoprene gasket and is mounted by external brackets. There are no knockouts or mounting holes in the box itself.

Breaker is operated by a slamproof, self-indicating external handle, but the enclosure must be opened to reset overload relays, which brings motor overload to attention of operating personnel.

Description: Designed to meet requirements of the JIC Electrical Standards for Industrial Equipment and the Machine Tool Electrical Specifications (as modified by the Mass Production Industry Electrical Specifications), this

MARLEY NOZZLES are First choice in CHEMICAL PROCESSING



Chemical processing plants all over the world pick MARLEY NOZZLES for their outstanding efficiency in providing maximum break-up of water at lowest pressures. Three designs are available . . . ONE PIECE, TWO PIECE, ATOMIZING. None have moving parts . . . All meet specific needs. Write for Bulletin SN3-50 today.

THE MARLEY COMPANY, INC.
KANSAS CITY 15, KANSAS

When inquiring check CP 5748 on handy form, pgs. 2-3

Solve your Ventilating Problems with
INTERNATIONAL

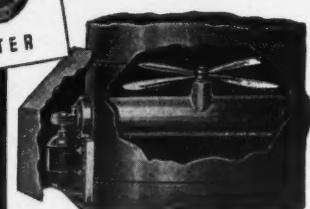


**DUCT BOOSTERS
STACK FANS
AND BLOWERS**

DUCT BOOSTER

If you have a problem of forced draft or ventilation, send for descriptive literature showing typical installations in ships and industrial plants, apartment houses and public buildings.

ASK FOR BULLETIN No. 103



STACK FAN

**INTERNATIONAL ENGINEERING INC.
DAYTON 1, OHIO.**

NEW YORK, 15 PARK ROW—CHICAGO, 407 S. DEARBORN

When inquiring check CP 5749 on handy form, pgs. 2-3

CHEMICAL PROCESSING



ERTEL CYLINDER TYPE Positive Seal DISK FILTER

1. FILTERING ELEMENTS are independently tightened to provide positive seal.

2. OUTER CYLINDER is closed by separate handwheel to prevent drippage or evaporation.

* This multi-purpose filter will operate with a lesser number of sheets than its rated capacity if so desired. Unit is arranged to make reloading and cleaning as easy as possible. Rigidly constructed inlet and outlet rings insure a positive seal and thus eliminate the danger of bypassing unfiltered liquid. Fully illustrated in bulletin ECD-1 which gives complete specifications.

USES: Drugs, Cosmetics, Lotions, Perfumes, Wines, Whiskies, Cordials, Rums, Cider, Extracts, Water, Syrups, Hospital Supplies, Plating Solutions such as copper, nickel, chrome, tin, Chemicals, Antiseptics, etc.

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KINGSTON NEW YORK
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ASBESTOS FILTER SHEETS • ASBESTOS SHEET FILTERS
CYLINDER TYPE DISC FILTERS • PYROGEN FILTERS
VACUUM BOTTLE FILTERS • PUMPS • MIXERS • CAPPERS

When inquiring check CP 5750 on handy form, pgs. 2-3



Smooth Vibrationless PROPELLERS

for MIXING, STIRRING,
AERATING, PUMPING
AGITATION



Manufactured by an exclusive process, Michigan propellers are perfectly balanced to avoid whip and strain on shafts. They are available for original equipment, replacement or special application in a wide range of materials and in sizes up to 60". Write for latest data folder.

A Michigan 34" Stainless Steel propeller with split hub for mounting in receptacle through manhole.

MICHIGAN WHEEL CO.
GRAND RAPIDS 3, MICHIGAN

When inquiring check CP 5751 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

unit is available in NEMA sizes 1 through 5, with ratings up to 200 hp, 440 volts polyphase.

Starters are furnished as standard with a 220/440-volt primary, 110-volt fused secondary, control circuit transformer that can be used on either 220 or 440 volt supply, 50 or 60 cycles.

Source: Class 11-206-NJ Combination Life-Linestarter is made by Westinghouse Electric Corp., Dept. CP, Box 2099, Pittsburgh 30, Pa. . . . or for more information check CP 5752 on handy form, pages 2 and 3.

Marks convex surfaces but uses ordinary straight line type . . .

concave spring pressure clip allows easy change, holds type fast in use

Uses: In hand or ram operated stamps for numbering convex surfaces of rod, tube, pipe, etc. Holder takes 4, 6, 8, or 10 pieces of type.

Features: Type is held by formed metal plate and coil spring. Ordinary straight line type for flat surfaces is used since holding plate makes it conform to the round surface. Type is reported to be easily interchangeable and is released by thumb pressure.

Description: Holder is made from shock resistant tool steel in one piece except for clip assembly. Tempered stainless steel clip locks type in place. Coil spring is retained in a hole in the side of the holder which is under no strain. Type is of standard body width, and spaced with segments to give proper curvature. Type sizes run from 1/16" to 1/4" in 32nds and 16ths. Other sizes are not stocked but can be provided. Holder and type are designated as "Hercules Concave Holder" and "Hercules Shoulder Style Type".

Source: Holder and type are available from The Acromark Company, Dept. CP, 490 Morrell St., Elizabeth 4, N.J. . . . or for more information check CP 5753 on handy form, pages 2 and 3.

Even though wringing wet, disposable toweling will not disintegrate . . .

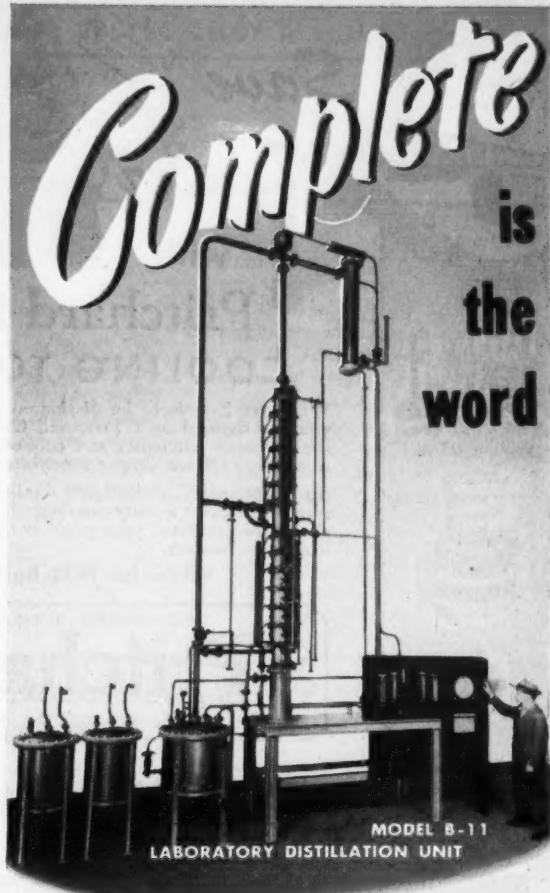
packed in 100' length in dispenser box with metal cutting edge; absorbent, lint-free

Uses: As disposable toweling for washroom and general use. May be used damp or dry.

Features: Does not fall apart when wet. Fully absorbent and lint-free.

Description: Disposable toweling comes in rolls of 100' length. Packed in portable dispenser which has metal cutting edge. Complete unit of 12 handy dispenser boxes is packed in a wood grained finish receptacle 11 x 7 x 30" high.

Source: Medico toweling is distributed by Woodlets, Inc., Dept. CP, Portland, Pa. . . . or for more information check CP 5754 on handy form, pages 2 and 3.



MODEL B-11
LABORATORY DISTILLATION UNIT

ANOTHER GREAT BRIGHTON ACHIEVEMENT

. . . the most complete design ever offered
in laboratory distillation units

- Column has 2 sections . . . operating together or completely independent of each other.
- Temperature recorder for each plate in lower section of column.
- One switch controls automatic sampler valves on each plate of lower column.
- All valves operate from control board.
- Steam pressure controller for kettle.
- All meters mounted on one control board.
- Separate receiving tanks for scale mounting.

WRITE FOR FULL DETAILS

BRIGHTON

COPPER WORKS, INC.
CINCINNATI 14, OHIO

Established 1914

When inquiring check CP 5755 on handy form, pgs. 2-3



*Save
Water
with*

Pritchard INDUSTRIAL COOLING TOWERS

Wherever heat is to be dissipated to the atmosphere, you can depend on a Pritchard Cooling Tower to do the job more efficiently and economically at water savings up to 99% over former wasteful methods!

Adequately sized, thoroughly engineered and manufactured of highest quality materials, Pritchard Towers are guaranteed to meet your peak as well as your normal load requirements.

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Houston • St. Louis • Chicago • Pittsburgh • Tulsa • New York
Representatives in Principal Cities from Coast to Coast

When inquiring check CP 5756 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

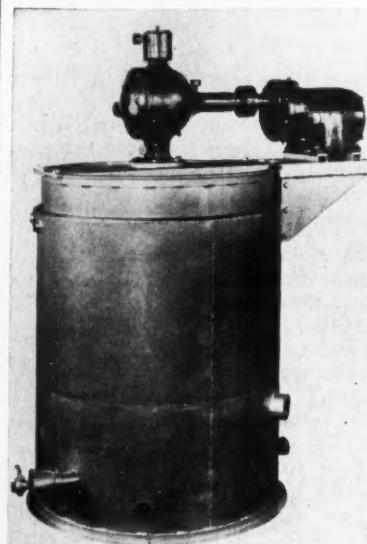
**Gas and steam heat
give close control
of mixer temp . . .**

steam-jacketed stainless steel mixer has four gas burners

Uses: For processing chemicals, dyes, paints, pharmaceuticals, and plastics under controlled heating conditions.

Features: Unit has four ring-type gas burners for direct heating, supplemented by surrounding steam jacket. Burners are rated at 300 cfm.

Description: Inner mixing tank, 36" diameter with a dished bottom, is 36" high. Unit is for atmospheric working pressure and is made of 14



Mixing tank uses two heat sources

gauge stainless steel. Full jacket for 5 psi gauge surrounds entire wall surface. Burners are located symmetrical under bottom. Agitator mechanism of six vertical blades is driven by a 2 hp gear motor at 47 rpm. Discharge valve handle extends through side wall near bottom of tank.

Source: Manufactured by L. O. Koven & Brother, Inc., Dept. CP, 154 Ogden Ave., Jersey City 7, N. J. . . or for more information check CP 5758 on handy form, pages 2 and 3.

**Stand or sit at this
drafting table . . .**

steel 4-post base; board adjusts to any angle

Uses: Drafting tables available in board sizes from 24 x 30" up to 42 x 72".

Features: All-steel 4-post base. Board adjusts to any angle by means

GAYCO CENTRIFUGAL SEPARATORS

GAYCO Separators, equipped with the adjustable centrifugal sizing fan — an exclusive GAYCO feature — make closer separations. Closer separations bring about higher production through efficient removal of the fines made by the mill. Closer separations bring about higher quality products by eliminating all undesirable oversize.

"TIMKEN BEARING EQUIPPED"
GAYCO brings you all these:



Range 60

to 400

mesh

**greater
capacity**

25 to 30%
**greater
production**

**Uniform
Products**

**Slow speed for
slow wear**

**Quick and easy
adjustments**

If you have an exceptionally hard separating problem,
TRY THE GAYCO.

Universal Road Machinery Co.

Rubert M. Gay-Division
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Canadian Representative: F. H. Hopkins & Co., Ltd.,
8500 Decarie Blvd., Montreal, Que.

When inquiring check CP 5759 on handy form, pgs. 2-3

**For pumping acids, caustics, slurries,
viscous liquids, specify...**

JABSCO
Corrosion Resistant
PUMPS

Patented
and Pat.
Pend.



SELF PRIMING. Obtains vacuum in excess of 26".
VERSATILE. Handles variety of liquids and slurries at wide range of speeds.

SAFE. Self-priming feature permits cleaner, safer, more accessible installations.

SIMPLE. Easily and quickly disassembled for cleaning.

TROUBLE FREE. Impeller lubricated by liquid pumped. No oil or grease cups. No packing. No metal to metal contact of moving parts. Ball Bearings.

MORE CAPACITY for its size and price than any other type of pump. Capacities up to 56 GPM.

FLEXIBLE IMPELLER. Odorless, tasteless, non-toxic corrosion resistant neoprene—also gum rubber if specified.

Stainless Steel Models available in 3/8", 1", 1 1/2" port sizes. Bronze Models available in 1/4" up to 1 1/4" port sizes. Cast Iron Models available in 1", 1 1/4" port sizes.

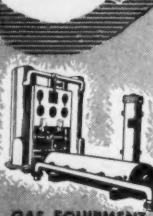
JABSCO PUMP COMPANY
2031 LINCOLN STREET • BURBANK, CALIFORNIA

When inquiring check CP 5760 on handy form, pgs. 2-3

COOLING
TOWERS

WATER
CONSERVATION
AT WORK

*Save
Water*



Down-to-Earth in ECONOMY

Imagination in Lab Equipment?

Yes, but also the sound business virtues
of Economy, Efficiency, and Long Life.

Let METALAB help you plan—without obligation.
Write for Complete Catalog.

SECTIONAL LABORATORY FURNITURE AND EQUIPMENT

M E T A L A B
Equipment Corp.

230 DUFFY AVE., HICKSVILLE, L.I., N.Y.

When inquiring check CP 5757 on handy form, pgs. 2-3

How to save money on protective painting



Do you know that Ucilon* Coating Systems withstand fumes or constant contact with such coating-destroying chemicals as acids, alkalies, bleaching and cleaning compounds, salt solutions, petroleum and its derivatives, water, oxidants and other corrosives?

Many chemical engineers know this, and are getting the benefits of longer lasting paint jobs and savings on maintenance of plant and equipment.

CASE HISTORY

System of Ucilon Coatings used by Michigan chemical company on caustic pumps and equipment. The company states that the coatings have held up for over two years—which is the best protection ever obtained on this equipment.

Send for data.

*Trade Mark

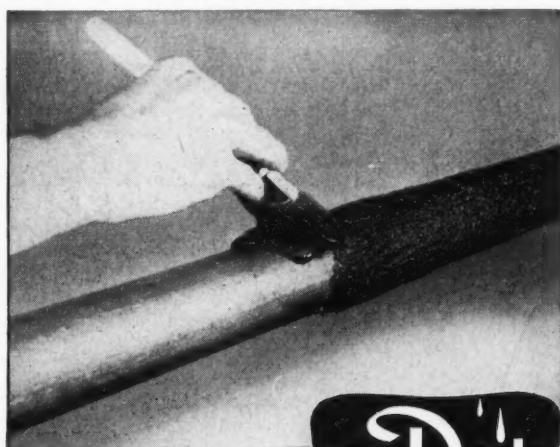


UCILON Protective Coatings

One Group of the Many UNICHROME COATINGS FOR METALS

UNITED CHROMIUM, INCORPORATED 100 East 42nd Street, New York 17, N.Y.
Detroit 20, Mich. - Waterbury 20, Conn. - Chicago 4, Ill. - Los Angeles 13, Cal.
In Canada United Chromium Limited, Toronto, Ont.

When inquiring check CP 5761 on handy form, pgs. 2-3



COVERS PIPES TANKS, WALLS

NO Drip

Anyone can brush, trowel or spray NoDrip on any clean, dry surface. Goes on like plaster, forms a seamless, protective coating. STOPS CONDENSATION DRIP!



NoDrip keeps equipment and floors safe and dry; prevents corrosion of metal and prolongs its life. Acid, alkali and brine resistant. Comes in 1, 5, and 55 gal. drums, ready for use.

TRY NODRIP

Apply NoDrip to a small area, compare the results with uncovered portions.

Send for free NoDrip Handbook

J. W. MORTELL CO., 530 Burch St., Kankakee, Ill.

When inquiring check CP 5762 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

of finger-tip control. Horizontal plane of board elevates from 32 to 42" above floor.

Description: "Stacor" drafting table can be provided with or without a variety of drawer combinations.

Source: Announcement of the Stacor Equipment Corporation, Dept. CP, 1887 Atlantic Ave., Brooklyn 33, N. Y. . . . or for more information check CP 5763 on handy form, pages 2 and 3.

Piping subassemblies are pre-fabricated

Two-color, illustrated bulletin discusses high and low pressure piping subassemblies. It describes and pictures pipe bends, coils, headers, manifolds, Vanstone work, process piping, and welded assemblies produced for the power generation, petroleum refining, chemical, and similar industries.

Also described are facilities for fabricating jobs from carbon steel, carbon moly, alloy, and stainless steel piping, in a complete range of outside diameters and wall thicknesses. Eight-page Bulletin WPI is issued by The Lummus Company, Western Piping Supply Div., Dept. CP, 504 W. 145th St., East Chicago, Ind. When inquiring specify CP 5764 on handy form, pages 2 and 3.

Translucent print paper boon to reproduction of drawings . . .

black-line, fast print-back, easy to make changes

Uses: Reproduction paper for making black-line prints from original drawings. Can be handled on conventional reproduction equipment and in ordinary room light.

Features: Translucent — drawing can be readily seen from the reverse side.

Lines erase readily by moistening, making drawing corrections simple. Paper is tougher, and will withstand longer and rougher handling, than maker's "regular" grade.

Description: Kodagraph Autopositive Paper, Translucent, is coated with the same emulsion used on the regular grade. It is being supplied in standard roll and sheet sizes, and in widths up to 42".

Source: Development of the Eastman Kodak Company, Dept. CP, Rochester 4, N. Y. . . . or for more information check CP 5765 on handy form, pages 2 and 3.

A REGULAR SERVICE OF THE COOPER ALLOY FOUNDRY CO., HILLSIDE, N. J.



Technical Topics

ALLOY TYPE 25-12

Norman S. Mott

Chief Chemist and Metallurgist

Alloy type 25-12 (CA22) is mainly a heat resisting alloy, although in the low carbon grade, with or without columbium or molybdenum, it is often used for its corrosion resistance. It is the most economical alloy for high temperature structural applications, such as tube supports, dampers and general furnace parts. In gas carburizing and bright annealing or hardening atmospheres its resistance is excellent and its resistance to high temperature air oxidation and to the corrosive action of high sulfur fuel flue gases is outstanding.

The 25-12S, 25-12SCb and 25-12SMo grades give excellent service in the sulfite pulp industry; and offer high resistance to nitric, phosphoric, dilute sulfuric and hydrochloric acids, as well as to organic acids such as citric, tartaric and lactic. 25-12S has better corrosion resistance than 19-9S, with carbon not being so critical. This holds for use in dilute sulfuric and hydrochloric acids at all temperatures, and in nitric acid at all concentrations and temperatures. In fact, in the boiling 65% nitric acid test 25-12S as cast is as good as 19-9S in the water quenched condition. The addition of molybdenum makes this alloy remarkably resistant, and its superiority in hot dilute sulfuric and hydrochloric acids over 19-9SMo is considerable. This suggests its use over 19-9SMo in some of the more exacting applications not necessitating the use of expensive FA-20 type alloy.

A.S.T.M. Specification B190-45T classifies the 25-12 alloy into two categories according to magnetic permeability: Type I, having a range of 1.05-1.7, and Type II, having a maximum of 1.05, after holding for 24 hours at 2000°F and water quenching. Since strength and ductility vary inversely at high temperatures, Type I containing ductile ferrite is able to resist fracture due to sudden overloads by yielding slightly under these stresses, but it has relatively low creep strength. Type II is completely austenitic and has high

creep strength under conditions of constant loading, but is not as resistant to sudden shock.

Of major importance in heat applications is the influence of structure on its properties. The amount, form and distribution of the carbides affect strength and ductility and are determined by the percentage of carbon present in the alloy, the temperature, and the time of holding. Of perhaps greater importance is the presence of ferrite in the structure. While it enhances ductility at elevated temperatures after short-time aging, it must be discounted if the alloy is to be exposed for extended periods at the intermediate temperature range of 1200-1700° F, as this range favors the formation of a sigma phase which is hard and brittle. Its presence may result in reduced strength, ductility, and especially thermal fatigue cracking resistance. Thus there is much less tolerance for suddenly applied stress overloading or rapid temperature changes. Continued service about 1700° F precludes this sigma formation.

To estimate ferrite on the basis of chemical analysis the Alloy Casting Institute suggests the following formula:

$$R.F. = \frac{[\% Cr + 3(\% Si - 1)] - [\% C \times 16]}{\% Ni}$$

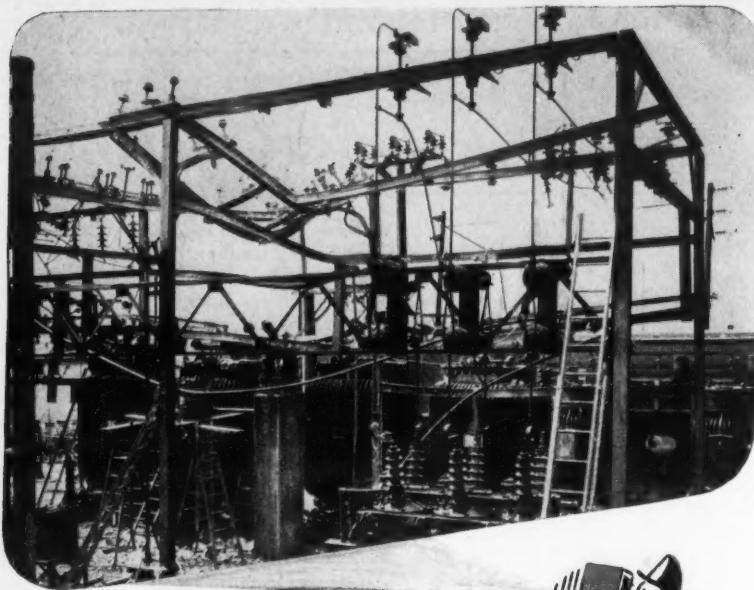
A ratio factor less than 1.7 denotes a negligible amount of ferrite or sigma and corresponds to the A.S.T.M. limit in permeability value of 1.05. A ratio factor of 1.7-1.85 denotes 2-7%, and a ratio factor above 1.85 denotes above 7% of ferrite or sigma.

Available on request

Cooper Alloy Materials Selection Chart — designed to help you choose the most economical alloy for any corrosive condition. This chart will save you money and save critical materials for national defense. Address your requests to Publicity Dept., The Cooper Alloy Foundry Co., Hillside 5, N.J.



Stainless Steel
VALVES • FITTINGS • CASTINGS



they said...

it can't happen HERE!"

That's right. Some well-intended individuals had it figured out that the hazard of fire at transformer sub-stations or industrial power generating units needed no particular study. So, as evidence, we offer the photograph above—proof of the fact that electrical equipment fires not only can, but do happen, and—with serious consequences.

Although damage to this transformer bank and supporting structural members was severe, the unseen loss of man-hours, out-of-service time and other factors, actually represents the major damage. They're losses, too, that seldom show up in fire reports.

In these days of our nation's need for maximum defense effort, you cannot afford to be without positive fire safety at all times. *"Automatic" FIRE-FOG* would have extinguished this electrical blaze instantly. Other systems of *"Automatic" Sprinkler* protection are available for the safeguard of any classification of commercial, industrial, or institutional property.

You can't overextend your practice of fire safety, for to anticipate fire is to avoid its ravages.

Stop fire at its origin with *"Automatic" Sprinkler* protection.

"AUTOMATIC" SPRINKLER CORPORATION OF AMERICA
YOUNGSTOWN 1, OHIO

"Automatic" Sprinkler

FIRST IN FIRE PROTECTION

DEVELOPMENT . ENGINEERING . MANUFACTURE . INSTALLATION
OFFICES IN PRINCIPAL CITIES OF NORTH AND SOUTH AMERICA

When inquiring check CP 5767 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Sweatbands for control of forehead perspiration . . .

soft and feather light, no metal parts; only cotton touches the skin

Uses: Sweatbands for control of forehead perspiration.

Features: Very soft and feather light. No metal parts to chafe or rust; only sanitary cotton touches the forehead.

Description: A special process expands cotton-backed gauze to about 8 times its normal thickness to expose fibers for maximum absorption. Sweatband is strong enough to withstand repeated washings for re-use. Maker reports that the small cost per item permits disposal after use.

Source: General Scientific Equipment Company, Dept. CP, 2700 W. Huntingdon St., Philadelphia 32, Pa. . . . or for more information check CP 5768 on handy form, pages 2 and 3.

Shuts off fuel supply to gas appliances if pilot fails . . .

combination safety and plug valve also usable as manual shut-off

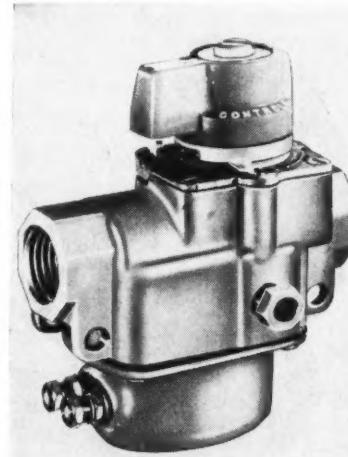
Uses: Serves both as a manual and safety shut-off valve for fuel in the event of pilot failure in gas fired unit heaters, floor furnaces, water heaters, boilers, circulating heaters, etc.

Features: Prevents the passage of gas into the main burner if the pilot flame has failed. Small, compact size is reported to be an advantage.

Description:

MR-5 is a combination safety and plug valve. It consists of a thermocouple safety incorporated into a high-flow gas cock valve structure. It is available in pipe sizes from $\frac{3}{8}$ to $\frac{3}{4}$ ". All models are UL and AGA approved.

Source: Development of General Controls Company, Dept. CP, 801 Allen Ave., Glendale, Calif. . . . or for more information check CP 5769 on handy form, pages 2 and 3.



Gas cock safety valve

Choice of impellers, housings in various alloys gives pumps wide service range . . .

available with direct coupled motor, V-belt drive or overhead mounted motor

Uses: For pumping chemicals and corrosive liquids.

Features: Open, high efficiency impeller, with low entrance losses for operating under low net positive suction head conditions.

Description: Available with direct coupled motor, V-belt

Corrosion

Protection

for All

Metal

Surfaces

Hysol⁴⁰⁰⁰ Coatings

Whatever the cause of corrosion, Hysol Coatings will give up to 10 years of absolute protection. Equally effective immersed in liquids or exposed to corrosive atmospheres, these coatings take the form of tough chemical and abrasion-resistant films. They can be applied by your own personnel without special equipment. With proper application strong adhesion to all metal surfaces is assured. Write for technical data.

✓ Resistant to salt water and practically all chemicals.

✓ Applied by brush, roll, spray or dip methods.

✓ Finish coat in eight colors.

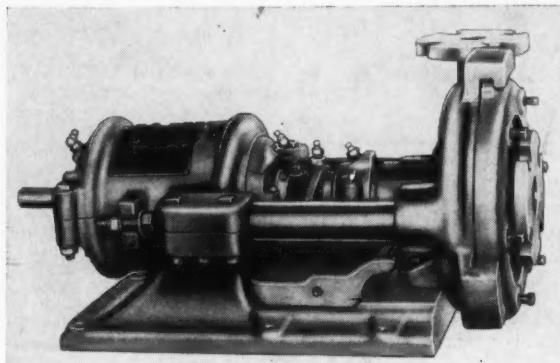


Plants at Olean, N.Y. and Smethport, Pa.

When inquiring check CP 5770 on handy form, pgs. 2-3

drive or overhead mounted motor. Impeller screwed on shaft. Available with impeller and housing of various alloys for handling corrosive liquids.

Pumps have large shafts and bearings and are provided with double stuffing box. Water-end has clamp ring



Handles chemicals, corrosive liquids

assembly which eliminates studs and tapped holes. Convenient slippage seal adjustment compensates for wear or unequal expansion.

Split bearings are held together by bolts and nuts and can be dismantled with ordinary wrenches. In such cases where corrosion takes place, bolts can be burned off or chiseled off without harming anything structurally important on the pump.

Source: TW type pumps are built by Nagle Pumps, Inc., Dept. CP, Chicago Heights, Ill. . . or for more information check CP 5771 on handy form, pages 2 and 3.

Hose attached to hand type fire extinguisher . . .

giving it more flexibility; design slanted toward use by untrained personnel

Uses: Extinguishing overhead or ground level fires. Has been designed for effective operation by inexperienced personnel.

Features: Longer discharge time gives untrained personnel more time to extinguish fire. Unit has high flexibility because, although it is only a 4-lb capacity hand type model, it has an attached 15½" long hose assembly.

Description: Operating range of the 4-B extinguisher is 12 to 15'. It contains 4 lb of dry chemical that is ejected through a self-closing nozzle which produces a fan shaped stream pattern. Unit is pressurized by a 1½ oz carbon dioxide cylinder in the dry chemical chamber. The self-closing nozzle makes extinguisher weather-tight.



Hand type extinguisher with hose

The Model 4-B is 19" high, 5¾" wide and 5½" deep. It weighs 10½ lb when fully charged. Each unit is subjected to 600 psi hydrostatic test and has a B2, C2 rating from Underwriter's Laboratories.

Source: Ansul Chemical Company, Dept. CP, Marinette, Wis. . . or for more information check CP 5772 on handy form, pages 2 and 3.



Alcoa Heat Exchanger News

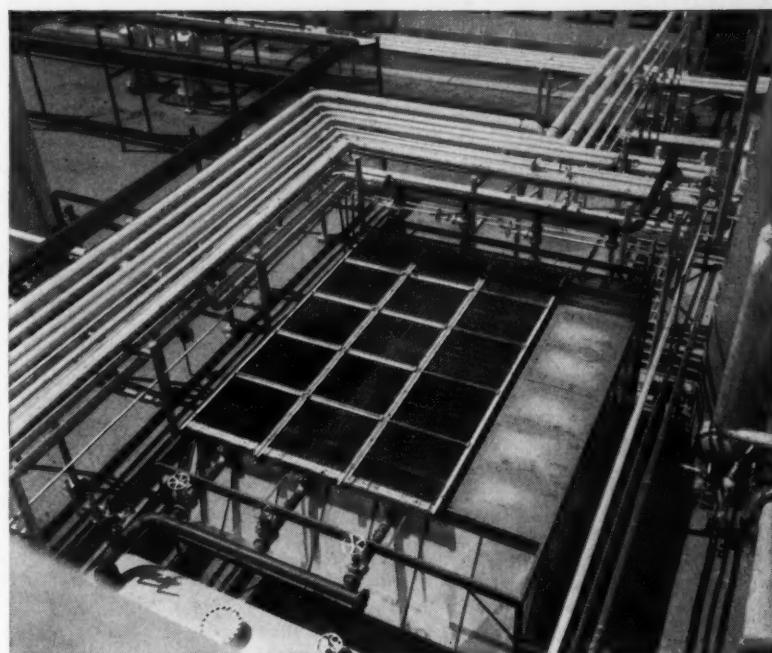


Published by Aluminum Company of America

Rearmament needs severely limit the manufacture of aluminum heat exchanger tubes. But we realize that the purchase of refinery and processing equipment requires long study of economic and performance factors. That is the reason for this message.

Skelly Oil Company Saves 50% IN TUBE COSTS ON AIR COOLED EXCHANGERS

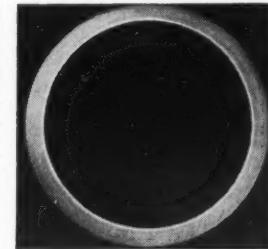
At their Eunice No. 2 gasoline plant near Eunice, New Mexico, Skelly Oil Company has installed a "Fin-Fan" air-cooled unit equipped with "aluminum tubes" and "aluminum fins" as a condenser for "Still Overhead Vapors." The company's engineers chose this type of condensing equipment because the atmosphere contained hydrogen sulfide and the vapors contained hydrogen sulfide and water in corrosive quantities. In addition there was a shortage of suitable cooling water. Aluminum tubes and fins were preferred to steel or Admiralty tubes with copper fins because of their resistance to hydrogen sulfide corrosion and lower investment cost. In this particular installation Fluor Fin-Fan designed equipment with Griscom-Russell K finned aluminum tube sections was used. The aluminum tubes are rolled into cast-iron headers and no cathodic protection has been necessary. These units have been in service for over two years—show no sign of corrosion—should last 12 to 15 years based on past experience with aluminum.



ALCLAD TUBES . . . a bargain in cooling water corrosion resistance

HOW THEY WORK

The thin zinc-aluminum alloy internal layer galvanically resists corrosion of the base aluminum alloy structure of the tube—acts like a "built-in" anode. Corrosion is confined within the integral cladding layer. Even when large areas of the Alclad coating have been destroyed by electrolysis, the rest of the coating still protects the exposed alloy core. Alclad Tubes have withstood such corrosive attack for more than 17 years.



WHAT THEY COST

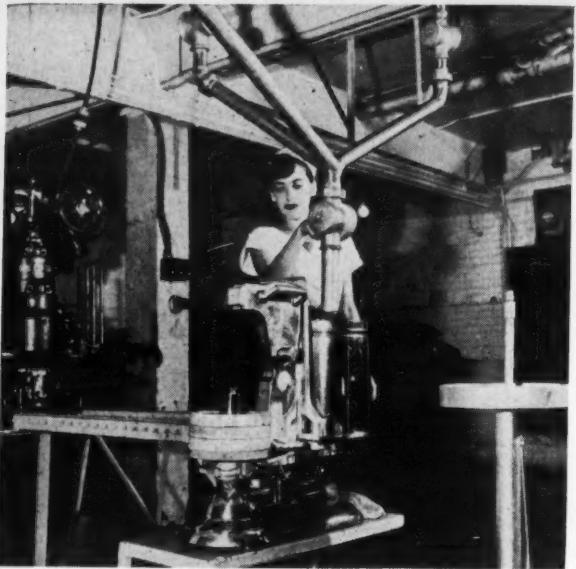
Foot for foot, metal for metal, Alclad Tubes cost less than any other tubes except bare aluminum. 20% less than ordinary steel. 47% less than Admiralty brass. 83% less than stainless steel.

ALCOA OFFERS BOOKLET

This 24-page booklet will answer many of your questions about Alcoa Tubes. It covers fabrication techniques, alloy selection, chemical and petroleum applications. It describes tube cleaning, inhibitors, cathodic protection. It contains complete information on fluid flow and heat transfer. There are formulas, tables and specification data. Write for your free copy today. ALUMINUM COMPANY OF AMERICA, 1861G Gulf Building, Pittsburgh 19, Pennsylvania.



When inquiring check CP 5773 on handy form, pgs. 2-3



Good example of an EXACT WEIGHT precision liquid-fill operation. Drawing puree from mixing tank to cans. Frosted Fruit Products Co.—Los Angeles, Calif.

Sound Packaging is an Engineering Problem . . .

Sound packaging becomes more and more an engineering problem in that all equipment, other than strictly packaging detail, must be correlated to produce quality products profitably. From a packaging standpoint alone engineering thinking must consider packaging leak (over or underweight). This save dollars control measure is accurate checkweighing . . . by manual means if necessary . . . by semi-automatic methods when practical (as shown above) . . . by fully automatic application if possible. Present day EXACT WEIGHT Scales fit more different products; more high speed production lines; do more specialized jobs than any industrial scales at the disposal of the engineer today. Are you setting up a new operation; redesigning an old one or expanding your present system? Save time, money, product and man-hours equipment wise by writing for full information pertaining to your engineering problem.



EXACT WEIGHT Indicator — Simplifies act of fast, accurate weighing . . . furnished with rebalancing attachment for quick rebalancing for portable scales . . . no maintenance . . . trouble-free operation.

EXACT WEIGHT SCALES *Industrial Precision*

THE EXACT WEIGHT SCALE COMPANY

904 W. Fifth Ave., Columbus 8, Ohio
2920 Bloor St., W., Toronto 18, Canada

When inquiring check CP 5774 on handy form, pgs. 2-3

Page 132

PROCESSING EQUIPMENT

Semi-skilled help can operate generator used for dielectric heating . . .

unit can be adapted to batch or continuous production methods; has simplified operating controls

Uses: As a source of radio-frequency waves for dielectrically heating non-metallic materials.

Features: Generator is readily adaptable to batch or continuous production methods. Pushbutton control, stepless adjustment of output power, and various protection devices make this generator suitable for use by semi-skilled employees.

Description:

Twenty-kw generator has all adjustments necessary for operation on the front panel. Rated power is delivered at a 100 percent duty cycle in accordance with NEMA standards. Built-in load coupling and tuning elements permit maximum transfer of power into a wide range of loads by front panel control. Enclosure is designed to minimize R-F radiation, and the complete generator is certified to comply with FCC regulations.

Source: Westinghouse Electric Corporation, Dept. CP, Box 2099, Pittsburgh 30, Pa. . . . or for more information check CP 5775 on handy form, pages 2 and 3.

Explains difference between light and standard pipe

Advantages and limitations of lightweight stainless steel pipe are illustrated in a number of graphs and tables. Cost and weight savings, as well as increased capacity (since ID of lightweight pipe is larger) are cited for the light pipe. Pressure and strength limits are given, showing where standard weight should be used. Schedule 5 is issued by Alloy Tube Div., The Carpenter Steel Co., Dept. CP, Union, N. J. When inquiring specify CP 5776 on handy form, pages 2 and 3.

Propel-repel action featured in soft pencil for marking china, moist surfaces . . .

markings are heat resistant as well, will stand boiling water or 1000°F

Uses: For marking china, moist surfaces, or where a soft pencil is indicated.

Features: Lead is propelled, repelled as in conventional mechanical pencils. Red and black heat resistant leads stand up to 1000°F (black markings turn permanently red at temperatures exceeding 500°F). China marking leads are available in red, black, blue, green, and yellow. They can also be used on glass, porcelain, and rubber.

Description: Marking pencil is about the size and shape of a conventional mechanical pencil. It takes leads 2-3/4"

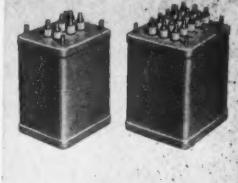


EDWARD E. ROBINSON

METERING PUMP

Pots Transformers

for FTR FASTER



Federal Telephone and Radio Corporation reports increased production and reduced loss of compound in potting transformers by using the Robinson Metering Pump. You, too, may benefit by investigating this new production tool.

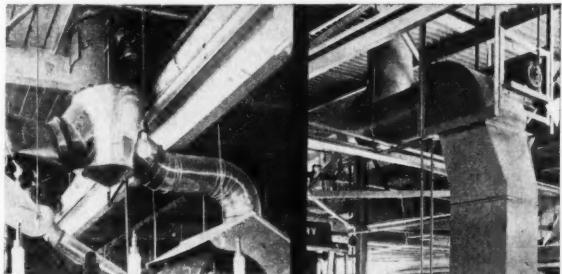
Specifications: Adapts to any production technique. Not a gravity dispenser — Forcibly ejects hot waxes and cements. Thermostatically controlled heat — Variable with a maximum reservoir temperature of 450°F. Motor driven, clutch actuated — 2/3 second per ejection. Variable discharge — Ejection changed in 2 seconds, without tools. Reduced unit costs — No skilled operator required. Saves material — reduces rejects. Write for Bulletin No. 2A.

EDWARD E. ROBINSON

INCORPORATED

95 PARK AVENUE • NUTLEY 10, N. J.

When inquiring check CP 5777 on handy form, pgs. 2-3



WINGFOIL FANS
handle air — pure
or impure — in
any volume or
pressure

Characteristics of the Wingfoil Fan make it ideal for the Process Industry. The motor is unaffected by dirt, heat, steam, explosive vapors, etc., as it is located out of the air stream. Where there is appreciable resistance to the air flow, the Wingfoil non-overloading characteristic prevents the motor from stalling or burning out. Light weight, compact, easily handled, it may be inserted into a line of duct, as an elbow or straight section. Write for bulletin.

Upper Left: Wingfoil Straight Line Duct fan in textile mill
Above: Wingfoil Elbow Type Duct Fan exhausting gases in garage

Wing

**WINGFOIL
·FANS·**

L.J. Wing Mfg. Co.
179 Vreeland Mills Road
Linden, New Jersey

When inquiring check CP 5778 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

long by 0.120" diameter. Moist-surface leads in red, black or green, as well as the china marking and heat resistant leads, fit this pencil.

Source: Pencil and leads available from Para Laboratory Supply Co., Dept. CP, 221 N. Hermitage Ave., Trenton 8, N. J. . . or for more information check CP 5779 on handy form, pages 2 and 3.

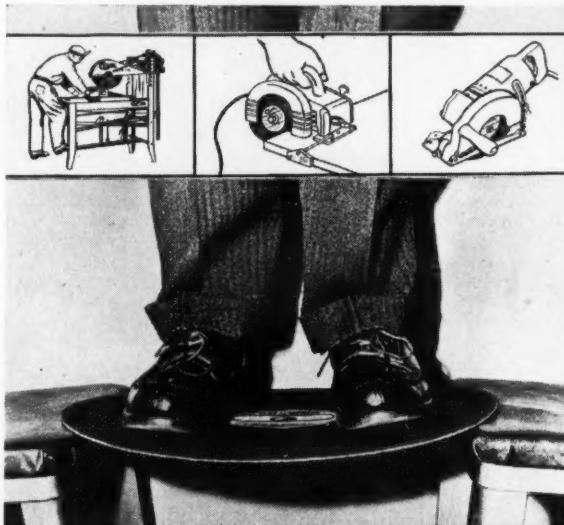
Bending, twisting, dropping do not damage saw blade of resin-bonded glass . . .

layers of glass fiber cloth impregnated with resins and silicon carbide

Uses: Blade is used on softer range of masonry materials such as limestone, sandstone, light aggregate concrete products, dry press refractories, and transite.

Features: Gives good efficiency in small hand power-tools used on material that cannot be held level or rigid . . . or, in any other instance where twisting and bending would break metal blade.

Description: "B-R" blade is manufactured from layers of glass fiber cloth impregnated with resins and silicon



Glass fiber blade does not break

carbide. Material is then pressed together under hydraulic pressure and processed in kilns where temperature is controlled to produce a resilient and tough blade.

Source: Manufacturer is Clipper Manufacturing Co., Dept. CP, 2800 Warwick, Kansas City 8, Mo. . . or for more information check CP 5780 on handy form, pages 2 and 3.

Flat, moving surface is integral part of chain

Flat conveyor-chain that employs top surface of links as carriers is featured in 20-page bulletin. Data is given which indicates the operating characteristics of this chain, as well as tables including strength, weights, and dimensions. Publication also describes and illustrates typical and unusual applications. Bulletin 51-60 is issued by Dept. PR, Chain Belt Co., Dept. CP, 1600 W. Bruce St., Milwaukee 4, Wis. When inquiring specify CP 5781 on handy form, pages 2 and 3.



HYDROFLUORIC ACID EYEWASH for Television Tubes — pumped by ACE Hard Rubber

THIS special machine for washing television tubes uses 12% hydrofluoric acid as the cleansing reagent. The job of handling this tough corrosive was given to four ACE hard rubber pumps.

The remarkable part of this story is not that ACE stands up under hydro-

fluoric acid; that's commonplace! But the fact that the pumps are constantly switched on and off—twice a minute, 24 hours a day, six days a week—is remarkable. What better test could you devise for a well built acid pump?

We can supply you with rubber-protected tanks, pumps, piping, valves, fit-

tings, and utensils in standard or special constructions for complete chemical processing, storage, or circulating systems. Saran and Parian (polyethylene) pipe and fittings are also available. Write for "ACE Rubber Protection"—64 pages of catalog data you'll find valuable in your work.



When inquiring check CP 5782 on handy form, pgs. 2-3

FOR YOUR STAINLESS STEEL FITTINGS AND FASTENERS

IT'S ALLMETAL FOR QUALITY AND DELIVERY

Allmetal's fasteners and fittings are stocked in types 304 and 316.
Specials to order. All made right by Allmetal.

ALLMETAL Specialists
in Stainless. Produce
Stainless Products
Exclusively.



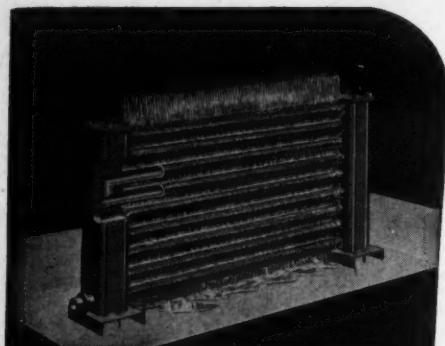
WRITE FOR
CATALOG U



MANUFACTURERS SINCE 1929
ALLMETAL
SCREW PRODUCTS COMPANY, INC.
33 GREENE STREET NEW YORK 13, N. Y.

When inquiring check CP 5785 on handy form, pgs. 2-3

IMPERVITE



hydrochloric
and sulphuric
can't hurt 'em

impervious graphite
sectional
CASCADE COOLERS
resist the
TOUGHEST CHEMICALS

Nothing resists corrosion like the resin-impregnated graphite from which IMPERVITE coolers are made. In such typical applications as processing Hydrogen Chloride and other corrosive gases or liquids, IMPERVITE remains unaffected after years of service. Simply assembled from standard sections to desired capacity. Easily adapted or expanded. Highly resistant to mechanical and thermal shock. Positive cooling action. Also IMPERVITE heat exchangers, towers, plate heaters; stock or special.

Write for our detailed
illustrated spec. sheets

Falls Industries, Inc.

AURORA ROAD - SOLON, OHIO

When inquiring check CP 5784 on handy form, pgs. 2-3

Page 134

PROCESSING EQUIPMENT

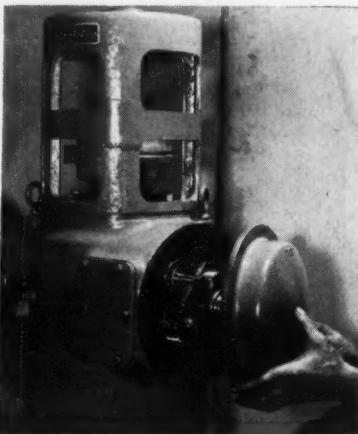
Speed of mixer changed with new gears . . .

gears available provide speeds from 16.5 to 420 rpm

Uses: Where future needs will call for different mixing speeds and mounting.

Features: By using proper gears, any one of 16 standard AGMA speeds are obtained. Interchangeable mounting brackets allow use with open or closed tanks.

Description: Gearing is so arranged that a gear change can be made in a short time without using any special tools. Model uses independent shaft



Mixer speed is changed with gears

suspension so that different shafts may be used with the same gearing. Impellers are standard and obtainable in a variety of shapes and sizes. Power response data is available for all types.

Source: Mixer is available from Mixing Equipment Co., Inc., Dept. CP, Rochester, N. Y. . . or for more information check CP 5785 on handy form, pages 2 and 3.

Vital nickel is saved when deposited on pipe in 0.006" thickness . . .

pore-free inside and outside linings withstand hard service

Uses: Process deposits predetermined thickness of nickel on the interior and/or exterior of pipe and fittings from 1-1/2 to 20" IPS to protect against corrosion.

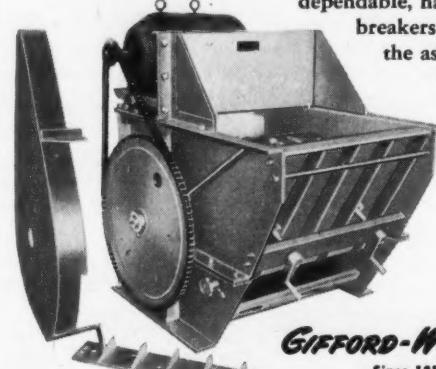
Features: Only 0.006" nickel is necessary to protect against most corrosive action. However, in extreme cases up to 0.015" can be applied.

Description: Bond is such that nickel is said to, for all practical purposes, become an integral part of the

VOLUME CRUSHING WITH G-W'S NO. 480 BREAKER

G-W's No. 480 Heavy Duty Breaker crushes up to 100 tons of solidified chemicals an hour! Any semi-friable product can be broken-up, in sizes from 1/2 inch to 5 inch maximum. Adjustable fine and coarse comb plates permit variable product size control. The body of the breaker is fabricated of heavy steel plate, flanged and ribbed for extra strength. No. 490 Heavy Duty Breaker, with smaller capacities, is similar in design and construction.

Complete information on G-W's complete line of dependable, hard-working breakers is yours for the asking. Write for Bulletin 482 today.



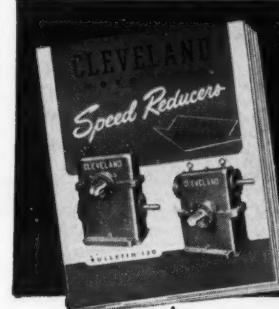
GIFFORD-WOOD CO.

Since 1814
Hudson, New York
420 Lexington Ave., New York 17, N. Y.
565 W. Washington St., Chicago 6, Ill.
Railway Exchange Bldg., St. Louis 1, Mo.

© 7168

When inquiring check CP 5786 on handy form, pgs. 2-3

Calling all users of Speed Reducers!



Get the new
Cleveland
Book
FREE

Bulletin 130 gives rating tables, dimensions and other data you need in selecting the right sizes in standard worm-gear speed reducers. Ask for your copy.

New bulletins on other types of Cleveland worm gear drives and worm-gear sets also available. Outline your needs. The Cleveland Worm & Gear Co., 3257 E. 80th St., Cleveland 4, Ohio.



CLEVELAND
Worm Gear
Speed Reducers

When inquiring check CP 5787 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Jacketed Pumps

for handling viscous materials

Pumps for H & B Jacketed Systems are made especially for us to fit the flanges of H & B jacketed fittings. These pumps are engineered to provide maximum efficiency in handling viscous materials. H & B fittings are designed with a double wall forming an all-over jacket, completely insulating the interior line, with no dead spots or unprotected places.

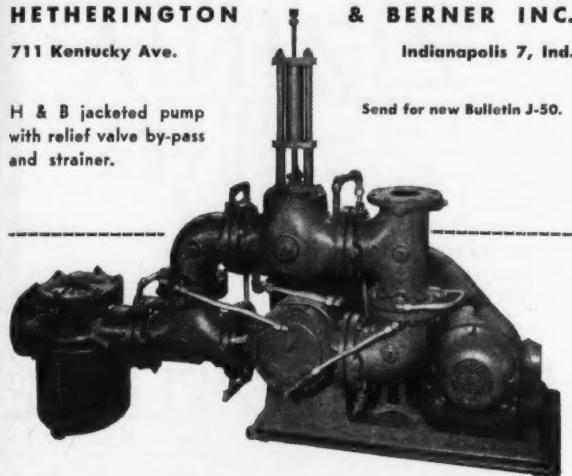
HETHERINGTON & BERNER INC.

711 Kentucky Ave.

Indianapolis 7, Ind.

Send for new Bulletin J-50.

H & B jacketed pump with relief valve by-pass and strainer.



When inquiring check CP 5788 on handy form, pgs. 2-3

Much Ado About Nothing

PUBLISHED IN THE INTEREST OF BETTER VACUUM PROCESSING

THE TECHNIQUE OF CHAMBER EVACUATION

For Vacuum Fumigation... Instrument Testing... High Altitude Simulation... Etc.

6396.. 6397.. 6398..

BEACH-RUSS COMPANY

DOING ANY CHAMBER EVACUATING?

The current issue of "Much Ado About Nothing" features the techniques of evacuating spaces of various volumes in the testing of instruments, simulation of altitude, vacuum fumigation, etc., besides covering other interesting aspects of high vacuum applications.

We'll be glad to send a copy and put your name on our mailing list for future issues.

BEACH-RUSS COMPANY

46 CHURCH STREET • NEW YORK 7, N. Y.

When inquiring check CP 5789 on handy form, pgs. 2-3

JULY, 1951

PROCESSING EQUIPMENT

steel. Lining is applied so as to be pore free and withstands heating, bending, welding and reducing without any effect on bond or corrosion resistance of the nickel.

Source: "Lectro-Clad" pipe and fittings are made by Bart Mfg. Co., Dept. CP, Belleville 9, N. J. . . . or for more information check CP 5790 on handy form, pages 2 and 3.

Capable of maintaining vacuum as low as 1 micron Hg . . .

large oil ejector vacuum pumps now being built for industrial use

Uses: For maintaining vacuum in the range from 1 to 100 microns Hg. Refrigeration industry uses these units for drawing all moisture out of coils, compressors, and condensers before sealing. Dehydration of biologicals and large-scale production of magnesium and metallic calcium are applications where the pumps are being used to maintain high vacuum. Also finding use in high vacuum sintering of tungsten carbide.

Originally intended for the process industries, applications are now as far-flung as creation of supersonic conditions in wind tunnels.

Features: Typical performance characteristics of these oil ejector vacuum pumps are best illustrated by the KB-150 exhaust unit:

Its pumping speed exceeds 200 liters/sec over the range from 5 to 100 microns Hg, and it can work into a forepressure as high as 0.4 mm Hg. Comparative calculations at 50 microns Hg pressure show that pumping costs with this unit are from 50 to 80% lower per pound of gas handled than with either mechanical pumps or steam ejectors used alone.

Description: Oil ejector vacuum pumps make use of the principle of vapor ejection from a nozzle at supersonic velocity for maintaining vacuum. A high-velocity stream is used to compress rarefied gas to pressures at which a mechanical pump can handle it efficiently.

Pumps having capacities measured in thousands of liters per second have been designed and built for specific applications.

Source: Announced by Vacuum Equipment Department of Distillation Products Industries, a division of the Eastman Kodak Company, Dept. CP, Rochester 3, N. Y. . . . or for more information check CP 5791 on handy form, pages 2 and 3.



New, Fast, Positive Fire Killer...

DRY CHEMICAL

WHEELED PORTABLE FIRE EXTINGUISHER

Experienced engineering develops new, highly efficient 150-pound capacity dry chemical type wheeled portable fire extinguisher . . . has exclusive design that assures you of lasting, foolproof fire protection.

This new fire killer is easy to operate, compact, well-balanced and offers extensive maneuverability indoors or outdoors. Does a highly effective job on flammable liquid, gas and electrical fires, as well as surface fires involving ordinary combustible materials . . . granted unconditional B, C rating by the Underwriters' Laboratories, Inc.

Exclusive design renders constant free-flowing dry chemical . . . fire extinguisher is partially inverted for wheeling, then fully inverted at fire scene, which changes the position of the dry chemical in the tank and thereby provides mechanical breakage. This outstanding mechanical breakage feature, plus a continuous nitrogen pressured agitation or fluffing, together with a skillfully blended free-flowing dry chemical, guarantees a faster, more effective and complete discharge.

Rechargeable on-the-scene . . . no special tools needed . . . C-O-TWO Dry Chemical for recharging packaged in handy 50-pound size, moisture-proof containers . . . spare nitrogen pressure cylinders readily available.

Act now for complete free information on this newest contribution to modern fire fighting. Remember . . . you can't put fire off . . . fire doesn't wait. Get the facts today!



C-O-TWO FIRE EQUIPMENT COMPANY NEWARK 1 • NEW JERSEY

Sales and Service in the Principal Cities of United States and Canada
Affiliated with Pyrene Manufacturing Company

MANUFACTURERS OF APPROVED FIRE PROTECTION EQUIPMENT

Squeez-Grip Carbon Dioxide Type Fire Extinguishers • Dry Chemical Type Fire Extinguishers
Built-In High Pressure and Low Pressure Carbon Dioxide Type Fire Extinguishing Systems
Built-In Smoke and Heat Fire Detecting Systems

When inquiring check CP 5792 on handy form, pgs. 2-3

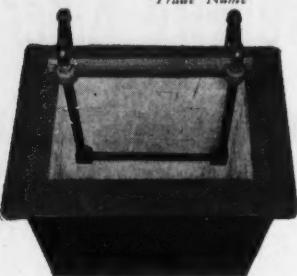
Page 135

Heil
CLEVELAND

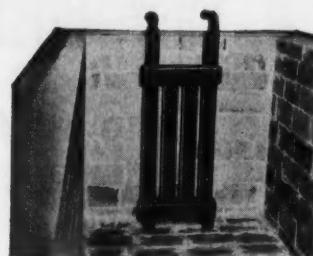
SPECIALISTS IN CHEMICAL-PROOF CONSTRUCTION
FOR HEATING or COOLING CORROSIVE LIQUIDS

USE *NOCORDAL IMPERVIOUS GRAPHITE

*Trade Name



"U" COIL



GRID EXCHANGER

- EXCELLENT HEAT TRANSFER
- RESISTS MOST CHEMICALS

SHELL AND TUBE EXCHANGERS • ELECTRIC UNITS •
IMMERSION COILS •

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PROCESS EQUIPMENT CORP.

12901 ELMWOOD AVE. • CLEVELAND 11, OHIO

When inquiring check CP 5793 on handy form, pgs. 2-3

You Can Filter Faster
AT LESS COST

with **Titeflex**

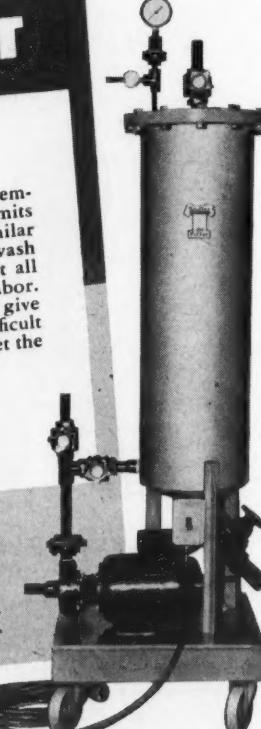
The Titeflex method of using permanent membranes provides filtration areas and permits flow rates unequalled by other filters of similar sizes. In addition, the Titeflex special backwash system lessens down-time by cleaning out all residue automatically, without manual labor. These and other exclusive Titeflex features give users more convenience in handling a difficult mechanical problem. If you use filters, get the facts about Titeflex.

TITEFLEX, INC.

509 Frelinghuysen Ave., Newark 5, N. J.

SEND FOR THIS
FREE BULLETIN

Clearly shows Titeflex advantages, lists sizes, capacities and filtration areas of all models. Write today for free copy.



When inquiring check CP 5794 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

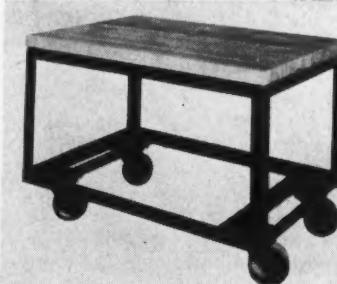
**Portable work table
has maple top . . .**

table carries one ton, but is easily moved

Uses: Utility table for heavy, general work where portability is desired.

Features: Finished in natural grain, the top is of 2" selected hard maple, glued and reinforced with concealed bolts.

Description: Marforge Table Truck is 48" long, 30" wide, and 31" high. Casters are of the semi-steel swivel type and are 6" in diameter. The



Easily moved table carries one ton

table is also available with legs, or can be furnished with floor locks. Metal frame is welded throughout and will support a weight of one ton.

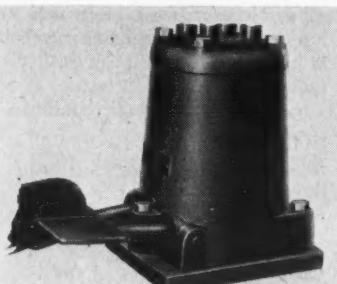
Source: Market Forge Company, Dept. CP, 25 Garvey St., Everett 49, Mass. . . . or for more information check CP 5795 on handy form, pages 2 and 3.

**Dust, dirt can't reach
air valve parts in cast
iron housing . . .**

foot operation frees both hands

Uses: For pedal control of hammers, shears, presses, hopper gates, furnace doors and other applications involving air operation.

Features: Operator has both hands



Foot-operated air valve

free to handle work. All operating parts of valve are fully enclosed against entrance of dust and dirt. Housing is sturdy cast iron. There is

**FROM
ATOMIZER
TO SHIPPING
CONTAINER
in 30 seconds**



**Lowest Cost
Easy Installation
Stainless Steel Construction
Design and Operating Simplicity
27 Years' Spray Drying Experience
Send for Bulletin**

FOSTER D.S.NELL, INC.
CHEMISTS-ENGINEERS

29 W. 15TH ST., NEW YORK II, N.Y.
PHONE WATKINS 4-8800

When inquiring check CP 5796 on handy form, pgs. 2-3

White PIONEER Stanzoils®

**Protect Your
Products . . .**

**Speed
Workers' Hands**

Easy-to-wear Whitecaps speed production in food handling, other jobs where sanitary cleanliness is vital. Also in handling small parts — workers really see small dark pieces in assembly and inspection, and feel 'em, too! Whitecaps won't smudge white products. For heavier jobs—regular white Stanzoils, light, medium, heavy weights. All of white DuPont neoprene, long lasting in oils, acids, caustics. Buy white Stanzoils from your supplier, or write today for complete information and prices.

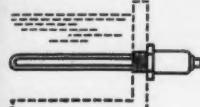
Industrial Glove Division

The PIONEER Rubber Company
641 Tiffin Road • Willard, Ohio
644 N. Vermont, Los Angeles 4, California

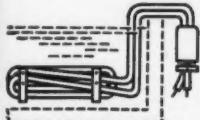
OVER 30 YEARS OF QUALITY GLOVE MAKING



When inquiring check CP 5797 on handy form, pgs. 2-3



G-E Calrod heaters are available in a wide range of sizes, shapes, ratings and sheath materials for "screw-in" . . .



or "over-the-side" installation. Thermostatic control will assure you of accurate temperatures and minimum power consumption.

Water, oils, plating baths, degreasing solutions and many other liquids do a more efficient job when accurately heated. And one of the fastest, most accurate and efficient methods of heating liquids is with G-E Calrod immersion heaters . . . by putting the heater right in the liquid for maximum heat transfer with minimum heat losses!

FREE BULLETINS, GEC-1005A—"Electric Heaters and Heating Devices" and GEA-5077, "Heating Liquids With Electric Heaters" will help you select and apply the heaters best suited to your jobs. Write to Apparatus Dept., Sec. 720-16, General Electric Co., Schenectady 5, N. Y.

*Reg. U. S. Pat. Off.

GENERAL ELECTRIC

720-16

When inquiring check CP 5798 on handy form, pgs. 2-3



Eastern Centrifugal Pumps are CLOSE-COUPLED and available in SPECIAL METALS. Over 100 models to choose from to pump from 0-70 psi, 0-70 gpm. Economical and trouble free.

FOR EASTERN'S NEW CENTRIFUGAL CATALOG 100, WRITE TO DEPT. AF

Eastern Industries Inc.
296 Elm St., New Haven, Conn.

When inquiring check CP 5799 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

no metal-to-metal seating. All parts are in pressure balance, eliminating creeping and crawling. Pipe connections are made conveniently through top of housing. Mechanism has stainless steel body and push-pull rods.

Description: Sizes from $\frac{3}{8}$ to 1", 3-way, 4-way, neutral position and regular actions. Single and two pedal designs for air to 150 psi and 150°F.

Source: Foot-operated air valves are built by C. B. Hunt & Son, Inc., Dept. CP, 2200 East Pershing Ave., Salem, Ohio . . . or for more information check CP 5800 on handy form, pages 2 and 3.

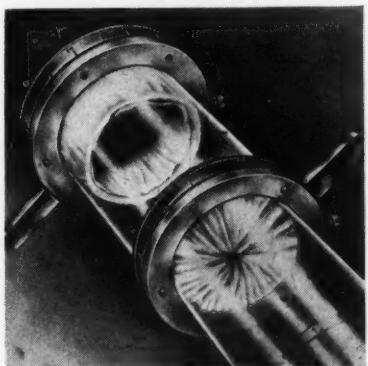
Bulk flow controlled without clogging at valve . . .

valve has no rigid moving parts in contact with material

Uses: Bulk materials valve is used for controlling flow of materials in weighing, blending, and packaging. It can also be used to regulate air rate in heating, drying, etc.

Features: Material passed through valve does not come in contact with any moving metal parts. This eliminates jamming and clogging.

Description: Syntron Flow Control Valve has a flexible diaphragm made of cotton duck, rubber, or similar material. Diaphragm operates like the

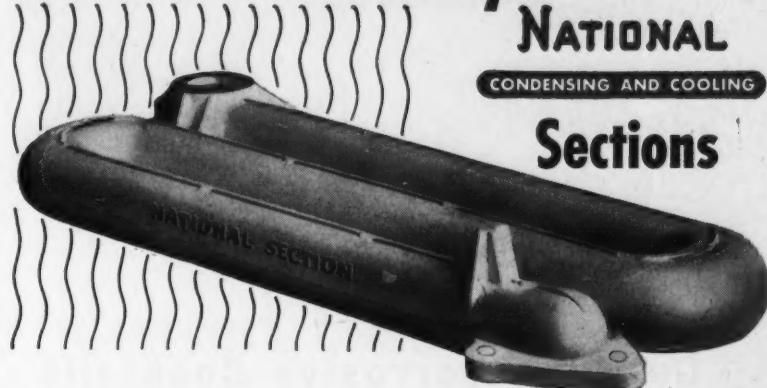


Open and closed positions of bulk material valve

iris of a camera. Rate is set by rotating the control lever. Readily attached to bin and hopper openings, ducts and supply chutes, the valve is reported to have a life of many months under hard usage and diaphragm may be replaced at low cost.

Source: Available in 5 sizes up to 12-inch diameter from Syntron Co., Dept. CP, Homer City, Pa. . . . or for more information check CP 5801 on handy form, pages 2 and 3.

Cool efficiently with NATIONAL



Sections

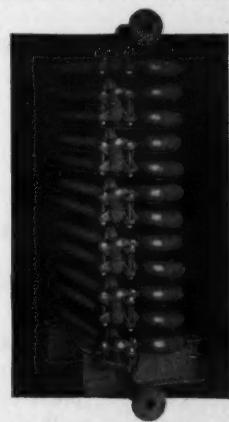
National Sections are self-contained elements cast of high quality gray iron for assembly into complete units for cooling and condensing many fluids encountered in widely varied types of chemical process operations. They present the most economical solution to many cooling problems when all operating factors such as long life, minimum maintenance and low cost of installation are taken into account along with reasonable initial equipment cost.

CHEMICAL INDUSTRIES APPLICATION

Sulfuric Acid Coolers • Air Heaters • Water Coolers • CO₂ Coolers • Alkali Coolers • Mixed Acid Coolers • Steam Condensers • Solvent Coolers • Solvent Condensers • Reflux Coolers • Aqua Ammonia Coolers • Soda Solution Coolers

OUTSTANDING FEATURES OF NATIONAL SECTIONS

- More heat transfer surface per unit pressure loss
- Turbulent flow action
- Effects of erosion minimized
- Clean, smooth exterior surfaces
- Maximum water utilization
- Corrosion avoided by continuous wetting
- Self-supporting from simple foundation
- More heat transfer in less area
- Quality materials
- Standardized parts—Available on short notice



Typical assembled stack of National Sections for cooling in sprayed service.

NRC
SEND COUPON
TODAY!

The National Radiator Co., Heat Transfer Division, CP
Johnstown, Pennsylvania
Please send Technical Manual HT-20 on National Condensing and Cooling Sections.

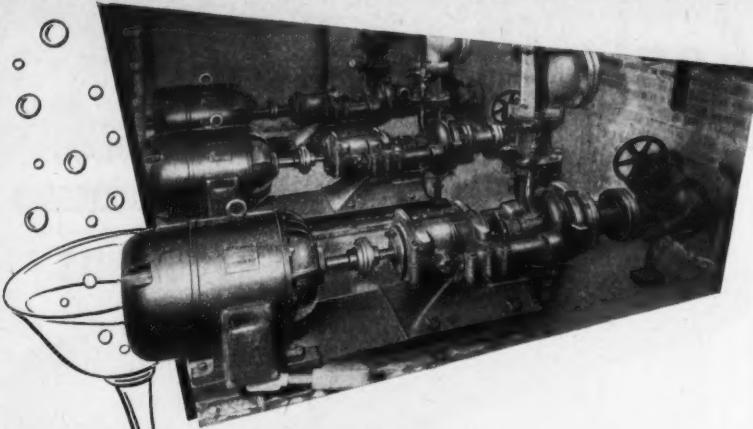
Name _____
Firm _____
Address _____ City _____ Zone _____ State _____

Heat Transfer Division

THE NATIONAL RADIATOR COMPANY
JOHNSTOWN, PENNSYLVANIA

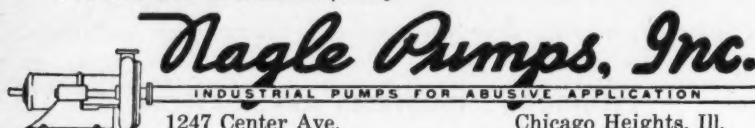
National Condensing and Cooling Sections

When inquiring check CP 5802 on handy form, pgs. 2-3



Guzzling Corrosive Cocktails To Make Better Copper

Making "grade A" copper depends on the constant circulation of hot, corrosive copper sulphate. This battery of Nagle type TW pumps guzzles hundreds of gallons of this metal ravaging mixture a day in a smelting and refining plant. Famous Nagle features like these will keep on the job years longer: select corrosion-abrasion alloys for water end parts, ample slippage seal adjustment, maintenance that is a marvel of simplicity. Follow the lead of hundreds of Nagle pump users. Write today for the complete Nagle solution to your most corrosive or abrasive pumping problems . . . vertical, horizontal and self priming.



When inquiring check CP 5803 on handy form, pgs. 2-3

What's "A New Solution"?

It's an article in CHEMICAL PROCESSING describing a new way of solving a tough plant operating problem. In each issue you will find specific "case histories" showing how these processing problems were solved. Each article states the operating problem . . . explains the process used and gives details of how problem was solved . . . shows results secured.

Take a look at "New Solutions" articles in this issue — they might suggest a "solution" for some of your tough processing problems.

PROCESSING EQUIPMENT

Corrosion resistant composition used to mold pulleys . . .

wheels are deeply grooved; bearings self-lubricated

Uses: For intermittent service in a wide range of applications. They can be utilized with cable, chain or rope ranging from $\frac{1}{8}$ to $\frac{1}{2}$ " in diameter, and are specified for use with remote control liquid level indicators, and many other types of chain or rope operated equipment.

Features: Corrosion resistance is enhanced by two coats of black enamel on the housings. Pulleys embody a deeply grooved, molded composition wheel that resists wear, acids, alkalies, oils and corrosive gases. In addition, the malleable iron housings of these units closely shroud the wheels to prevent cable, chain or rope from slipping between wheel and housing.

Durable bronze axles are incorporated in all these pulleys, and lubrication is unnecessary because wheels are impregnated with graphite on axle bearing surfaces.

Description: Standard pulley types now available include corner as well as through overhung and underhung models, which can be furnished with aligned or transversed mounting lugs. Hinged and swing-type units with either bolt or stud mounting attachments can also be supplied. Fixed position pulleys which utilize maker's adjustable beam clamps for attachment are recommended for installations in which it is difficult or undesirable to drill mounting holes in structural members.

Corner pulleys are available in both open-face and seal type models. Open-face units have a full 120° working angle, while seal type pulleys are intended for conduit enclosed runs and have a 90° operating angle. Load carrying range of pulleys is up to 200 lb.

Source: Thompson Electric Co., Dept. CP, 1101-88 Power Ave., Cleveland 14, Ohio . . . or for more information check CP 5804 on handy form, pages 2 and 3.

Case histories show uses of cloth tube filters

Four-page publication contains case histories involving use of cloth tube filters. "Industrial Ventilation", Vol. 1, No. 1, is issued by American Wheelabrator & Equipment Corp., Dept. CP, Mishawaka, Ind. When inquiring specify CP 5805 on handy form, pages 2 and 3.



The Johnson Joint has solved many design and production problems as nothing else can. And the Type L, shown above, is helping to fit it into more applications all the time. It has lugs cast on body to permit simple rod support, an arrangement that both simplifies installation and assures proper alignment. Completely packless, self-lubricating and self-adjusting, the Type L Johnson Joint is used on calenders, dryers, mills, etc. — wherever steam or liquids must be admitted to rotating machine parts.

Write for new catalog



826 Wood St., Three Rivers, Mich.

When inquiring check CP 5806 on handy form, pgs. 2-3



Protection from foreign matter increases the life of the equipment and prevents costly down-time. Self-Cleaning feature allows cleaning of screen without removal from strainer body or shutting off operating fluid.

Available in sizes (1 $\frac{1}{4}$ "-10"), in cast iron, cast bronze, cast steel, carbon moly, chrome moly and stainless steel, with screwed, flanged or socket welding connections, to 1500 lbs. press., 1000°F.

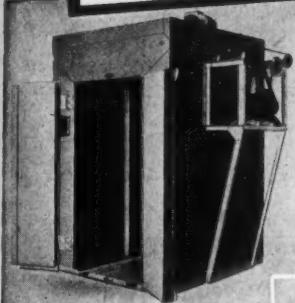
Stocked and sold by Industrial Distributors.
SEND FOR—Bulletin No. 465
281 Grant Avenue Lyndhurst, New Jersey

PRESSURE REDUCING VALVES • PRESSURE CONTROLLERS
FLOATLESS LEVEL CONTROLS • PUMP GOVERNORS
TEMPERATURE REGULATORS • SELF CLEANING STRAINERS
AIR HORNS • STEAM WHISTLES

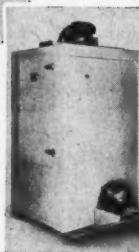
When inquiring check CP 5807 on handy form, pgs. 2-3

**Better in Design and Performance
Priced Right—Delivered Quickly**

GEHNRICH standard OVENS



- Recirculation Heating to 500° F. for Best Operating Uniformity.
- Aluminized Steel, Insulated Panel Construction.
- Standard Safety Controls.



CABINET TYPE

For multiple tray loading; made in 3 sizes, gas or electric. Equipped with motor operated recirculating fan and F. M. approved explosion release latch.

TRUCK OR RACK TYPE

Made in 18 sizes. Direct or indirect gas or oil; steam or electric heating. Equipped with 2 or 3 motor operated recirculating fans and Factory Mutual approved explosion release latches.

BENCH TYPE

Made in 3 sizes for laboratory or small scale production.

**CATALOGS
ON
REQUEST**

**GEHNRICH OVEN DIVISION
W. S. ROCKWELL COMPANY**

220 Eliot Street • Fairfield, Conn.

When inquiring check CP 5808 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

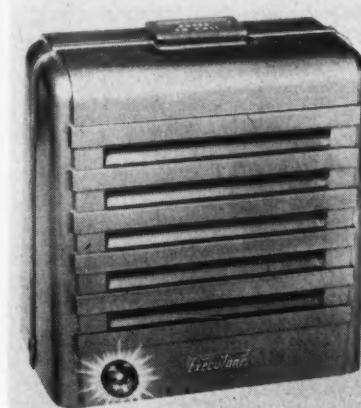
Red lamp warns staff when intercom line is open . . .

prevents eavesdropping on office talk near remote station

Uses: Staff station for intercommunication system.

Features: Staff station automatically opens for talking or listening when a master station calls. Thus, a person near the staff station does not have to interrupt his work to go over to the station and operate it manually.

The new feature is incorporation of a lamp on the remote staff station that



Red lamp glows brightly when intercom line is open

glows when line is open. This prevents the possibility of eavesdropping on the staff station from a master station, a fault of previous remote staff stations.

Description: Station is 6½" high, 6" wide and 3½" deep at base. Of sturdy, die-cast metal construction, it is finished in attractive, harmonizing "metalustre" bronze. Red "privacy" lamp is on lower left hand front corner.

User can hear and be heard from 20 to 30 feet away, says maker.

Source: Executone, Inc., Dept. CP, 415 Lexington Ave., New York 17, N. Y. . . or for more information check CP 5810 on handy form, pages 2 and 3.

Heat transfer surfaces shown in bulletin

Four-page, 2-color bulletin contains photographs and brief descriptions of various heat transfer surfaces. Bulletin ID-151 is issued by Modine Manufacturing Company, Dept. CP, Racine, Wis. When inquiring specify CP 5811 on handy form, pages 2 and 3.

Write today for full information.



AMERICAN AGILE CORPORATION

PLASTIC DIVISION

5806 HOUGH AVE. • CLEVELAND 3, OHIO

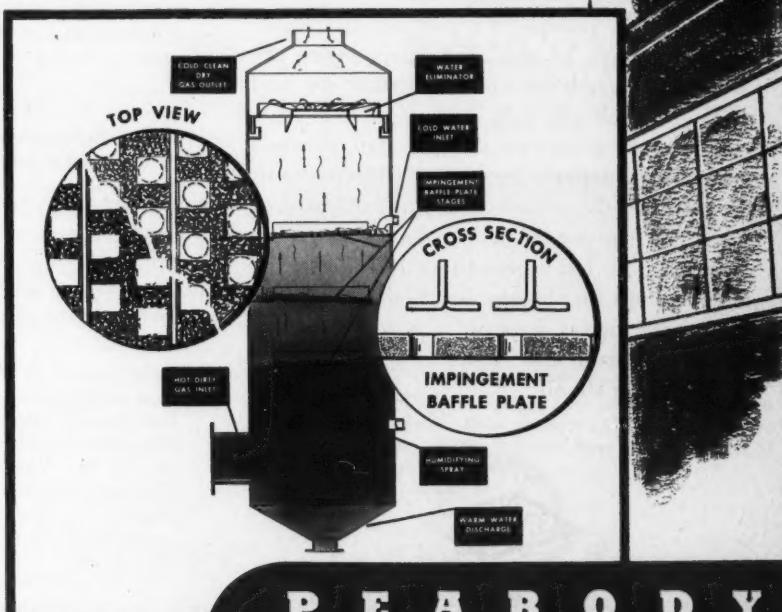
When inquiring check CP 5809 on handy form, pgs. 2-3

JULY, 1951



Convert Losses Into Profits!

Peabody Scrubbers have reduced or entirely eliminated stack losses and atmospheric pollution for numerous plants in many widely varying industries. By means of unusually efficient impingement baffle plates, Peabody Scrubbers remove minute suspended material, such as dust, fume and smoke particles from gases. Plants operating lime kilns, soda ash dryers, and blast furnaces, or those formerly venting H₂S, are typical instances of Peabody units turning losses into extra profits and eliminating atmospheric pollution. Write for Bulletin 203A for complete details.



PEABODY
ENGINEERING CORPORATION

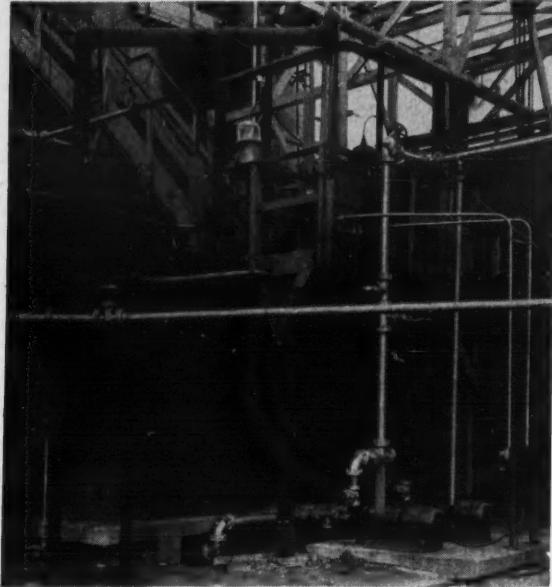
580 FIFTH AVENUE • NEW YORK 19, N.Y.
Manufacturers of all types of combustion equipment, direct-fired air heaters, gas scrubbers, coolers, and absorbers.

OFFICES IN PRINCIPAL CITIES
PEABODY LIMITED • LONDON, S.W.1, ENGLAND

801

When inquiring check CP 5812 on handy form, pgs. 2-3

Page 139



Ask the Man Who Makes It

It's significant that LaLabour pumps are so widely preferred in the manufacture of sulfuric acid. The photograph shows a pair of LaLabour DZT pumps in a contact operation. LaLabour pumps of this and other types are commonly used for the manufacture and transfer of sulfuric acid.

If you are a user of sulfuric acid you can profit by the experience of those who make it. Continuity of operation is dependent not only upon the use of proper corrosion resistant materials but upon the selection of the proper pump for the service. Today's LaLabour pumps are the product of 28 years of dealing with such problems. That is why you can depend upon them.



ORIGINAL MANUFACTURERS OF THE SELF-PRIMING CENTRIFUGAL PUMP

LaBOUR

THE LABOUR COMPANY, INC. • Elkhart, Indiana, U.S.A.

When inquiring check CP 5813 on handy form, pgs. 2-3

Why the Pilot Plant?

(Continued from page 4)

mill, life of filter cloths, corrosion and erosion of metals, etc.

The above all assume the process to be operable, although the pilot plant may show that, as originally conceived, it is not. Seldom, however, would the pilot plant be embarked upon unless there were a very reasonable certainty that the process could be made to function.

Further results of the pilot-plant operation may be:

1. To provide sufficient samples of products for testing, market analysis, etc.;
2. To provide physical properties of intermediate and final product streams;
3. To provide, in certain cases, thermodynamic data;
4. To provide bases for economic evaluation and process guarantees;
5. To train operators.

All these objectives may, of course, not be necessary of fulfillment. There is no practical reason why the plant should be designed to provide, at additional expense, information which can be more economically obtained in another way. It is, therefore, of the utmost importance at the outset to set down what is hoped that the pilot plant will achieve. When a large expenditure is to be involved it is only wise to itemize the aims and to plan carefully the campaign. The accuracy of the results desired should be stated, and the procedures analyzed to see if this can be obtained.

During the course of the operation, the reproducibility of the results should also be investigated as otherwise the confidence limits will be unknown, and exact conclusions will not be able to be drawn. The greatest value from the work will accrue only after a careful analysis of the data has been made.

Too often pilot plant operation is continued at considerable expense beyond the point of maximum return, or in the wrong direction, merely through lack of adequate study of the earlier data. It should be remembered that paper work and study are so much cheaper than piloting, and that the latter is no excuse for the failure to use existing basic knowledge and fundamental information.

Pilot plants are basic in process development today, but still we must ask and be certain to answer the question, "why a pilot plant?"

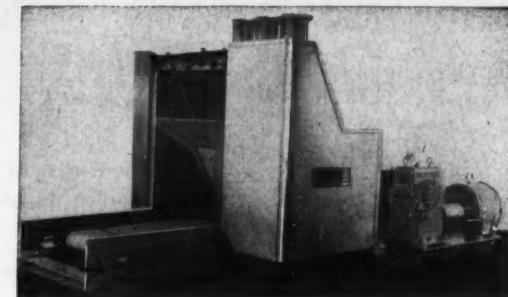
Acknowledgement

Last month's guest editorial, "How to Find and Develop Ideas Into Salable Products", by Robert D. Goodall, Assistant to the Vice-President — Marketing, The Davison Chemical Corporation, was digested from Industrial and Engineering Chemistry, pages 838-840, April, 1950. Acknowledgement, prepared for inclusion with the article, was omitted.

Control valves standardized

"Uniform Face to Face Dimensions for Flanged Control Valves" suggests size standards. To obtain, remit 25c direct to Instrument Society of America, Dept. CP, 921 Ridge St., Pittsburgh 12, Pa.

Page 140



"National" Chemical Extruder Assures Less Compact Material

In this modern "National" machine, a new *wiping motion* leaves the extruded material *less compact* . . . in better form for subsequent handling, and permitting the extruding of numerous materials that previously could not be processed. Automatic loading synchronized with extrusion operation. Designed for continuous tray or apron drying. Furnished in various sizes and capacities, and any required metal.

Write for Complete Information.

Chemical Dryers of
All Types and Sizes



Special Drying and
Heating Equipment

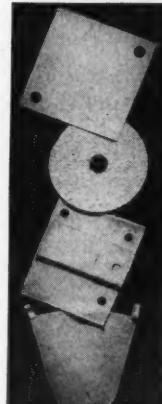
THE NATIONAL DRYING MACHINERY CO.

2709 N. Hancock Street, Philadelphia 33, Pa.

When inquiring check CP 5814 on handy form, pgs. 2-3

FILTER MEDIA for Chemical Processing

FILTER PAPER



LABORATORY . . . INDUSTRIAL . . . Made from finest materials for accuracy and dependability . . . light and heavy weights . . . slow and fast filtering speeds . . . large stock maintained . . . cut to any size and pattern . . . samples furnished for experimental purposes.

FILTER CLOTH

Cottons, wools, felt, glass, nylon, silk, vynylon, seran, metal mesh and many other synthetic materials cut and sewn in all shapes and sizes . . . many weaves, weights and finishes.



ASBESTOS PADS

Quality filtering pads furnished in a range of grades varying in porosity and filtering characteristics. Sizes and shapes for all needs.



OTHER "Filpac" PRODUCTS: Filters, stainless steel storage and mixing tanks, filters, pumps, conveyors, fittings, and filter aids.

WRITE TODAY for further information and samples!



FILPACO INDUSTRIES
The FILTER PAPER CO.

2432 S. Michigan Ave. Chicago 16, Ill.

When inquiring check CP 5815 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Convention & Exhibit Schedule

Sept. 3-7. American Chemical Society, Diamond Jubilee Meeting, 120th National Meeting, New York, N. Y.

Sept. 10-14. Instrument Society of America, Sixth National Conference and Exhibit, Coliseum, Houston, Tex.

Sept. 16-19. American Institute of Chemical Engineers, Regional Meeting, Sheraton Hotel, Rochester, N. Y.

Oct. 8-10. American Oil Chemists' Society, Fall Meeting, Edgewater Beach Hotel, Chicago, Ill.

Oct. 8-12. National Safety Council, 39th National Congress and Exposition, Hotel Stevens, Chicago, Ill.

Oct. 23. Association of Consulting Chemists and Chemical Engineers, Annual Meeting, Shelburne Hotel, New York, N. Y.

Oct. 29-31. National Paint, Varnish and Lacquer Association, Chalfonte-Haddon Hall, Atlantic City, N. J.

Nov. 5-8. American Petroleum Institute, Annual Meeting, Chicago, Ill.

Nov. 5-8. Refrigeration Equipment Manufacturers Association, 7th All-Industry Refrigeration and Air Conditioning Exposition, Navy Pier, Chicago, Ill.

Nov. 26-Dec. 1. 23rd Exposition of Chemical Industries, Grand Central Palace, New York, N. Y.

Dec. 2-4. Chemical Specialties Manufacturers Association, Annual Meeting, Mayflower Hotel, Washington, D. C.

Dec. 2-5. American Institute of Chemical Engineers, Annual Meeting, Chalfonte-Haddon Hall, Atlantic City, N. J.

1952

Jan. 16-18. The Society of Plastics Engineers, Inc., 8th Annual National Technical Conference, Edgewater Beach Hotel, Chicago, Ill.

March 11-14. The Society of the Plastics Industry, Inc., Fifth National Plastics Exposition, Convention Hall, Philadelphia, Pa.

March 16-19. American Institute of Chemical Engineers, Regional Meeting, Biltmore Hotel, Atlanta, Ga.

May 6-9. Scientific Apparatus Makers Association, Annual Meeting, Edgewater Beach Hotel, Chicago, Ill.

May 11-14. American Institute of Chemical Engineers, Regional Meeting, French Lick Springs Hotel, French Lick, Ind.

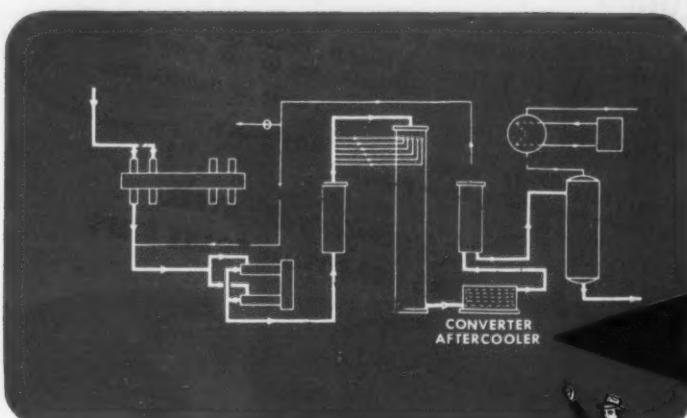
Sept. 4-6. American Institute of Chemical Engineers, Regional Meeting, Palmer House, Chicago, Ill.

Dec. 7-10. American Institute of Chemical Engineers, Annual Meeting, Cleveland Hotel (headquarters) and Carter Hotel, Cleveland, Ohio.

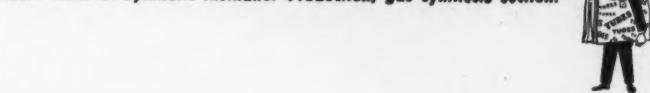
Controlled Materials Plan basic info given

Sixteen-page booklet explains the need for and operations of the Controlled Materials Plan. Subjects covered include definition, fundamentals, relation to defense program, principal regulations and materials covered, and the scope of the program. This booklet is not a set of complete regulations.

Copies of the complete regulations are also being released at this time. Booklet or complete regulations are issued by US Dept. of Commerce, National Production Authority, Washington, DC.



Flow chart of Synthetic Methanol Production, gas synthesis section.



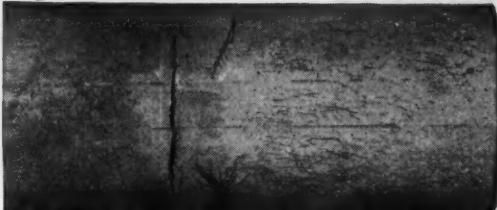
Chloride solutions cause pitting-corrosion of stainless steel. Stresses on the material — whether those of construction or high-pressure operation — become localized at the root of the pits. Such stresses may reach sufficient local magnitude to cause stress-corrosion and, eventually, failure.

In this case Croloy 5 tubing was found to have superior resistance to initial pitting and consequently to the whole series of previous troubles.

Whatever the analysis needed, whether stainless grades, intermediate chrome alloys, or carbon steel, "Mr. Tubes" — your B&W Tube Co. representative — can help you solve your problems of tubing selection from B&W's complete range of types, sizes, grades, and finishes. Send for Technical Bulletin 6-E, Properties of Carbon and Alloy Seamless Steel Tubing for High-Temperature and High-Pressure Service.

let's
take a
closer look
at

STRESS CORROSION



Here's what happened to Stainless tubing (TYPE 347) when exposed to chloride-bearing bayou water while conveying methanol and unreacted synthesis gases at 300 F and 5000 psi. Note transgranular branching cracks typical of stress-corrosion in pitted stainless steel.



Here's Croloy 5 tubing, after twelve months in the same service. Note absence of pitting and stress-corrosion. Wall thickness was not appreciably reduced.



When inquiring check CP 5816 on handy form, pgs. 2-3



BLAW-KNOX RUNNING BOARDS FAVORED BY MOST RAILROADS AND CAR BUILDERS Because'

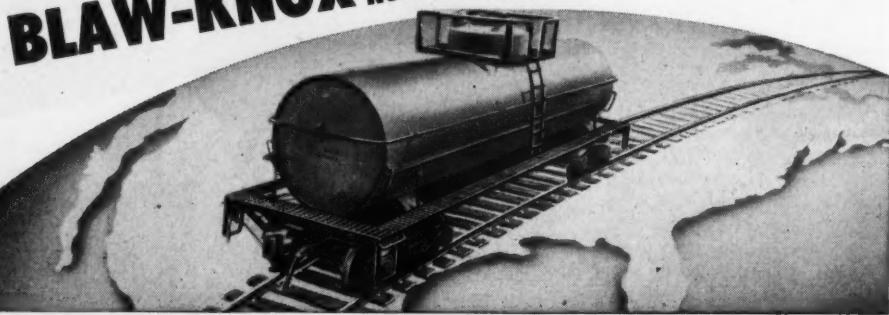
1. Rigid one-piece electroforged construction—easily installed.
2. Serrated edge bearing bar and twisted cross bar.
3. Sure footing under any weather conditions.

4. Standard panels easily replaceable in case of wreck or accident.
5. Running boards, Brake Steps, Platforms for box and tank cars to suit your designs.

For complete data write for Bulletin 2328

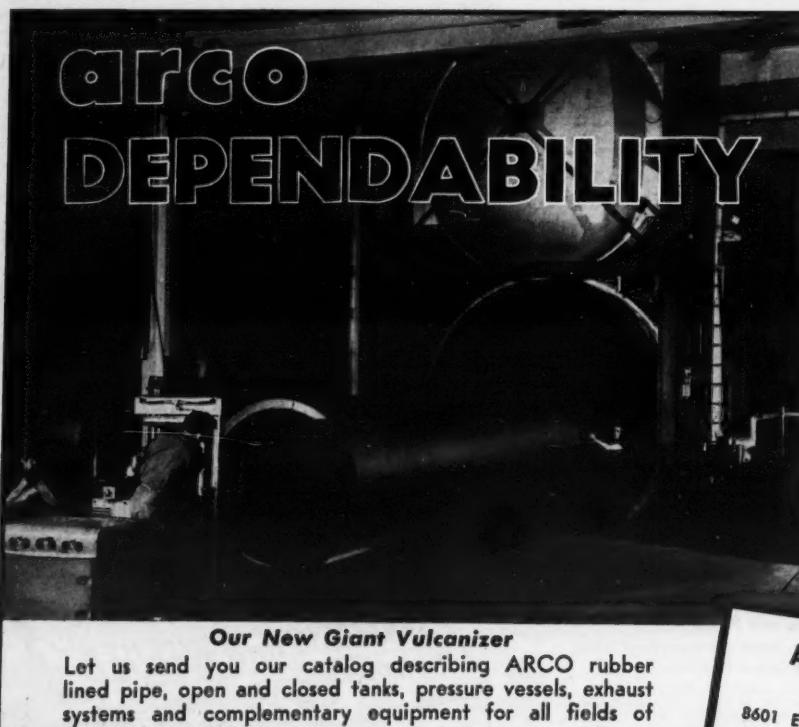
BLAW-KNOX DIVISION OF BLAW-KNOX COMPANY
2076 Farmers Bank Building, Pittsburgh 22, Pa.
Offices in Principal Cities

BLAW-KNOX *Electroforged® STEEL*
RUNNING BOARDS AND BRAKE STEPS



When inquiring check CP 5817 on handy form, pgs. 2-3

arco DEPENDABILITY



arco
RUBBER LINED CHEMICAL
INDUSTRY EQUIPMENT

Our engineering background, manufacturing experience and complete facilities enable us to produce equipment, in any size, of dependable quality. ARCO equipment gives maximum service with minimum maintenance.

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COMPANY, INC.**

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Our New Giant Vulcanizer

Let us send you our catalog describing ARCO rubber lined pipe, open and closed tanks, pressure vessels, exhaust systems and complementary equipment for all fields of chemical processing.

ANYTHING CAN BE COVERED WITH RUBBER

When inquiring check CP 5818 on handy form, pgs. 2-3

Discussed in This Issue - - -

PROCESSES, EQUIPMENT and MATERIALS

Use this "quick-locator" when you want information on a specific type of process, equipment or material mentioned in the processing stories or the advertisements in this magazine. Everything discussed in this issue is given here, if you want more data you can write manufacturer direct . . . or turn to pgs. 2-3 and use the handy "Information Request Slip." This is a special service provided by the publisher . . . no obligation or charge, of course. The publisher contacts the proper manufacturers for you—information comes to you direct.

A

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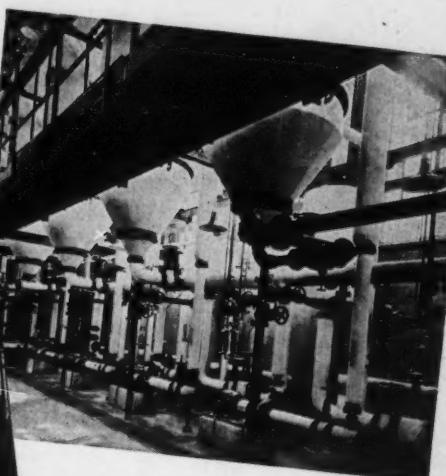
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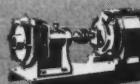
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- **PARALLEL AIR FLOW** . . . in the DAY Dust Filter, dust and air travel downward together.
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- **NO DUST-CATCHING LEDGES** . . . DAY TYPE "AC" FILTERS, with a pattern of square-to-round inlet fittings, have no flat surfaces where dust can accumulate and become contaminated.
- **OUTSTANDING ADAPTABILITY** . . . units can be furnished with multiples of 4 tubes; housed or unhouse (see illustration); can be applied for either pressure or vacuum.

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Write-to-DAY for Bulletin 491



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ANY RPM by dial control

NEW TYPE VA
1/4 to 3/4 hp

11C MOTORS U
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Box 2058, Los Angeles 54, Cal.
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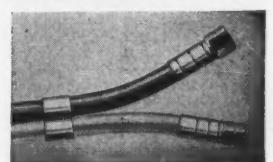
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TWO HOSES...ONE LINE!



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Patented Twin-Weld® combines a green oxygen line and a red acetylene line molded into one compact unit. No more dangerous, tangled separate hoses... the operator has one neat, flexible, non-kinking line that makes his job safer, faster, more efficient. Especially useful in close-quarter work. Call



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CHEMICAL PROCESSING

"That's Interesting"

If it coagulates, does it gel?

A recent decision of a U. S. District Court on the validity of a certain latex patent, hinged on the difference in meaning that the judge found between the words "coagulation" and "gelling".

Dr. Henry P. Stevens thoroughly analyzes this decision in the current issue of "Rubber Developments," prepared by the British Rubber Development Board and issued here by the National Rubber Bureau.

In his article, Dr. Stevens goes thoroughly into the background of the terms "coagulation" and "gelling" as applied to latex. His conclusion: "There is nothing to distinguish a coagulum, lot, coagel or gel so far as rubber latex is concerned."

The issue of "Rubber Developments" in which this article appears is available without charge from Natural Rubber Bureau, 613 K St., N. W., Washington, D. C.

Four-in-one industrial floor cleaner

Four operations are combined in one in a new industrial floor cleaner that applies cleaning material, scrubs, rinses and damps the floor. It is especially suited for service in buildings with 2,000 to 15,000 square feet of floor space, and where narrow aisles and congested areas are a problem.

This self-propelled machine is also suitable for dry work such as polishing and steel wooling. (Scrubber-Vac Div., Finnell System, Inc., Elkhart, Ind.)

Castor oil in military coatings

At the suggestion of the NPA, a meeting was held at headquarters of the National Paint, Varnish & Lacquer Association. Subject was necessity for using dehydrated castor oil in certain military coatings, particularly in MIL-E-10687 (ORD) which covers a coating for shells that requires a styrenated alkyd resin.

Consensus was that resins suitable for use in MIL-E-10687 might be made without dehydrated castor oil, and that some such materials have already been accepted as satisfactory. The discussion also brought out that most other coatings for military purposes can be made without castor oil, although there are probably exceptions to this.

Present indications are that the supply of castor oil for 1951 will not be significantly greater than in 1950. (Summarized from National Paint, Varnish and Lacquer Association Coatings—Washington, D. C.)

The colder, the better

An interesting characteristic of aluminum is that its strength is greater at sub-zero temperatures than at room temperatures. This makes it particularly useful to the Armed Forces for operations in the Arctic. (Ohmite News)

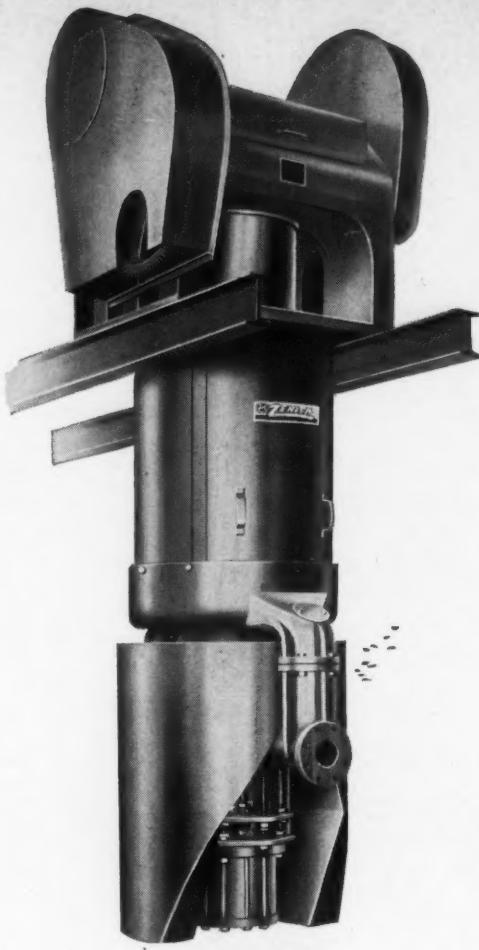
Chemicals control soil erosion

Chemicals which show promise as agents for controlling soil erosion are undergoing tests at Ohio State University. In the laboratory, chemical treatment of the soil surface reduced the damaging effects of rainfall as much as 15 times. Test plots have been established on slopes at University Farms to obtain field confirmation of laboratory results.

Additives are applied to a slope, in quantities of 1 or 1½ lb per 100 square feet, at a cost of about \$1 per lb. Experiments do not indicate any effect on normal growth of vegetation on the treated surface. It is believed that the additives will prove useful also in stabilizing frost-susceptible soils with the objective of preventing or controlling frost damage to highways.

Rust traps for car and truck radiators

A new type of pulverizing rust trap slows the flow of water between engine and radiator. Rust from engine and radiator is activated by water swirling through a screen within a trap. Utilizing aluminum tubing and castings in its construction, the trap eliminates replacement of expensive parts. Available in models for passenger cars and heavy duty trucks. Made by York-Rusgo Co., 1903 Market St., York, Pa. (As reported in Ako Aluminum News Letter.)



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**patents applied for

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Now 100% automatic! The Floating Cone holds a constant, automatically controlled pressure against the pressed pulp as it is discharged.

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Glue Plants: pressing tankage for water removal and grease recovery

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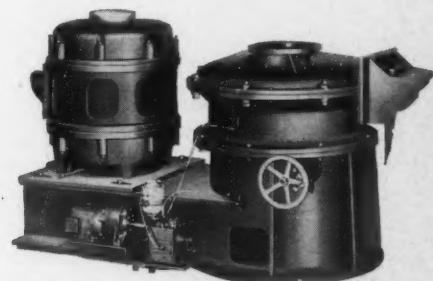
Corn Starch Plants: dewatering germ and fiber

Canneries: vegetable and fruit juice extraction, dewatering by-products

Rayon and Cellophane: for the continuous production of alkali-cellulose in rayon, cellophane, C.M.C., etc. by the slurry system

ADVANTAGES:

smaller floor space requirements • high recovery rate in separating liquids from solids or solids from pulp • continuous process instead of batch • greatly reduces evaporation costs • high yield of marketable by-products • single or multistage continuous counter-current extraction • aids in solution of stream pollution problems



J-C SHREDDER APPLICATIONS:

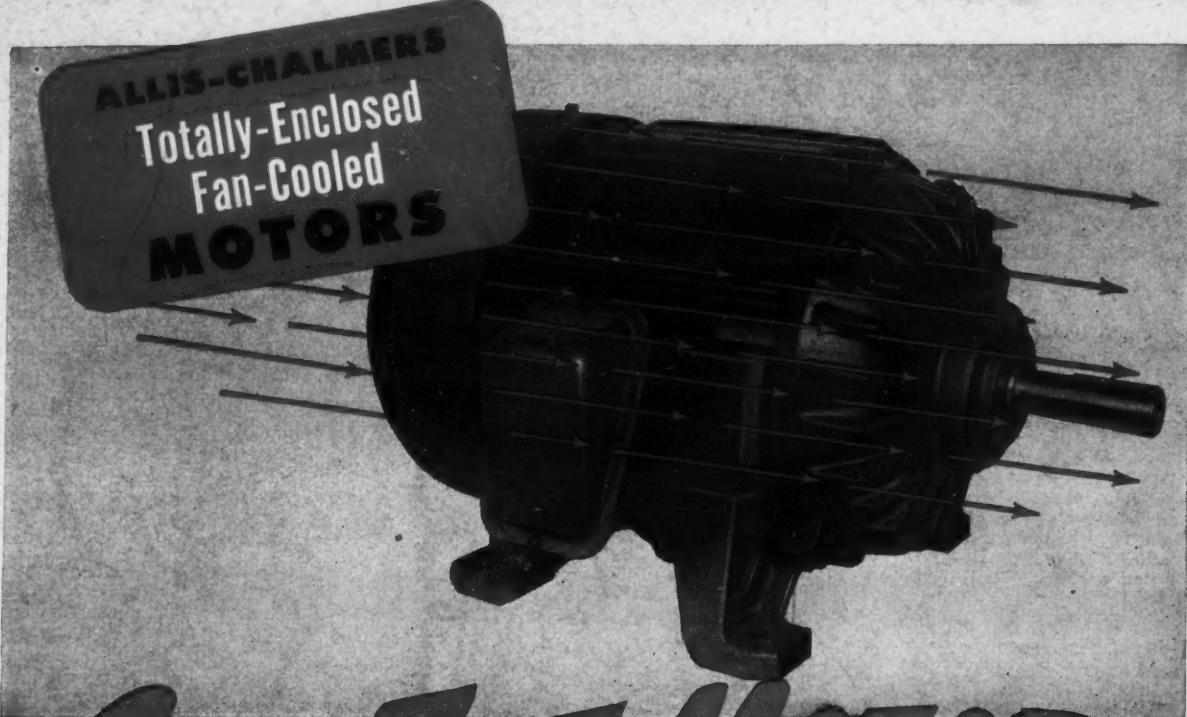
For Shredding, Defibering, Granulating, Mixing and Blending

Operates over a broad range of consistencies, but the specific power is exceptionally low at densities of 25% or higher • Self-cleaning . . . never plugs at any density • Has an inherently high capacity • Requires a minimum of floor space • Low in first cost and maintenance • Available in two sizes . . . with capacity of 25/50 tons/day or 75/150 tons/day



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DROP MOTOR MAINTENANCE COSTS to a new low by reducing motor cleaning operations. And this new Allis-Chalmers Type APZ tefc motor makes maintenance costs lower than ever before on this type of motor.

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Concealed air passages and pockets have been eliminated; dirt cannot build up to cause overheating. Cooling air is blown over the ribbed cast iron frame and bearing housings carrying dirt away with it. How about oily dirt that sticks? It can be wiped or blown off without stopping the motor.

Rigid Construction

The frame is of rigid cast iron which

not only has high inherent corrosion resistance, but also holds bearings in alignment. Bearings are prelubricated at the factory and should need no attention for years. Tapped holes with pipe plugs to permit greasing and to provide grease relief are standard equipment.

Get All The Facts

The new Allis-Chalmers Type APZ totally-enclosed fan-cooled chemical motor is built in all NEMA standard frame sizes from 224* to 505. Also in explosion-proof type.

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PUMPS — Integral motor and coupled types from $\frac{3}{4}$ in. to 72 in. discharge and up.



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ALLIS-CHALMERS

For more information on product advertised at right, specify CP 5829 . . . see information request blank between pages 2-3.



*Similar design non-ventilated motors Type APK, also available in frames 203 to 224 inclusive.